HOKKAIDO

Commercial
50Hz R410A DC Inverter

Service Manual

2010-2011

※The specifications, designs, and information in this book are subject to change without notice for product improvement.

Part 1
General Information

1. Model Names of Indoor/Outdoor Units

1.1 Indoor Units

R410A (capacity in Kw)

Type	Function	3.5	5.3	7.1	10	14	17
New Four-way cassette	Cooling and heating	√	√				
Four-way cassette	Cooling and heating		√	√	√	√	√
Duct	Cooling and heating	√	√	√	√	√	√
Ceiling & floor	Cooling and heating	√	√	√	√	√	√
Console	Cooling and heating	√	√				

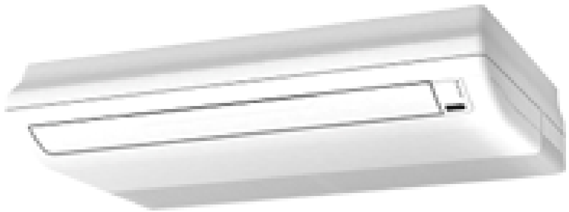
1.2 Outdoor Units

Model of outdoor unit and corresponding indoor unit

Universal Outdoor unit Model	Compressor type	Compressor Brand	Matched indoor units
HCKI 351 XR	Rotary DC Inverter	GMCC	HTFI 352 XR HUCI 352 XR HSFI 351 XR HFII 351 XR
HCKI 532 XR	Scroll DC Inverter	Shenyang SANYO	HTFI 532 XR HUCI 531 XR HSFI 531 XR HFII 531 XR
HCKI 712 XR	Rotary DC Inverter	HITACHI	HUCI 711 XR HSFI 711 XR HTBI 711 XR
HCSI 1083 XR	Rotary DC Inverter	MITSUBISHI	HUCI 1081 XR HSFI 1081 XR HTBI 1081 XR
HCSI 1413 XR	Rotary DC Inverter	MITSUBISHI	HUCI 1411 XR HSFI 1411 XR HTBI 1411 XR
HCSI 1762 XR	Scroll DC Inverter	MITSUBISHI	HUCI 1761 XR HSFI 1761 XR

2. External Appearance

2.1 Indoor Units

Duct 	Ceiling & Floor 
Four-way Cassette 	Compact Four-way cassette 
Console 	

2.2 Outdoor Units

HCKI 351 XR



HCKI 532 XR



HCKI 712 XR



HCSI 1083 XR



HCSI 1413 XR – HCSI 1762 XR



3. Features

3.1 Universal outdoor unit design

Indoor unit with the same capacity can match with the same outdoor unit.

3.2 High efficiency and energy saving.

Thanks to the DC inverter technology and optimized piping system, the EER and COP of whole series can easily reach A-class.

3.3 Low noise and low starting current.

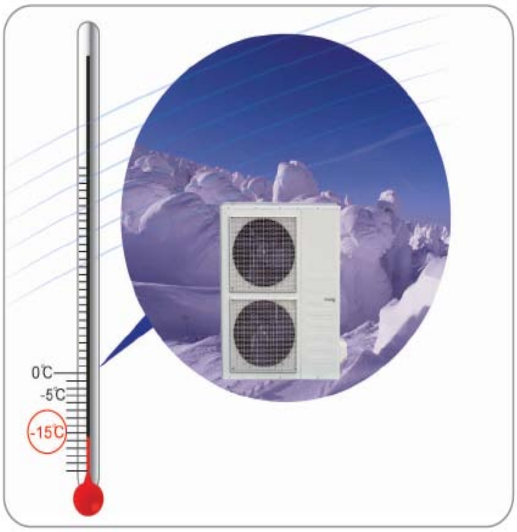
Thanks to the DC inverter technology, the system can work with low noise, and very small starting current.

3.4 Intelligent refrigerant adjustment technology.

Throttle part is made up of capillary and electronic expansion valve (EXV). The outdoor unit can output the most accurate capacity in any condition.

3.5 Working in cooling mode under -15℃ (except 3,5kW)**.**

Outdoor unit built-in with low ambient kit, it can control the outdoor unit's fan and cooling can be performed throughout the year for computer rooms, banquet halls, etc. Wide operation range covers outdoor temperatures as low as -15℃ for cooling (except 3,5kW).



3.6 Indoor & outdoor unit's power supply is separate.

3.7 All indoor units have network control function.

3.8 All indoor units have Auto-restart function.

Part 2
Indoor Units

New Four-way Cassette Type (Compact)

1. Features

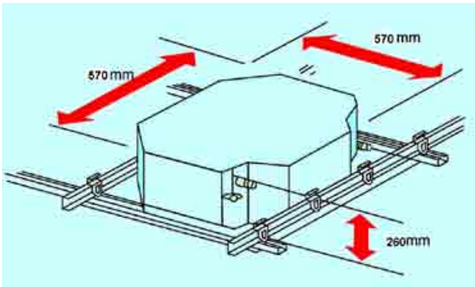
(1) Low operation noise
---Streamline plate ensures quietness
---Creates natural and comfortable environment

(2) Efficient cooling
---Equal, fast and wide—range cooling

(3) The adoption of the most advanced 3- Dimensional Screw fan
---Reduces the air resistance passing through
---Smoothes the air flow
---Makes air speed distribution to the heat exchange uniform

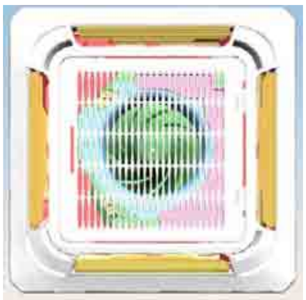


(4) Improvement for easy installation and maintenance
---Little space is required for installation into a shallow ceiling
---Because of the compactness and weight reduction of the main unit and panel, all models can be installed without a hoist



(5) 360^0 Air Flow Panel
360^0 air outlet makes equal,fast ad wide range cooling





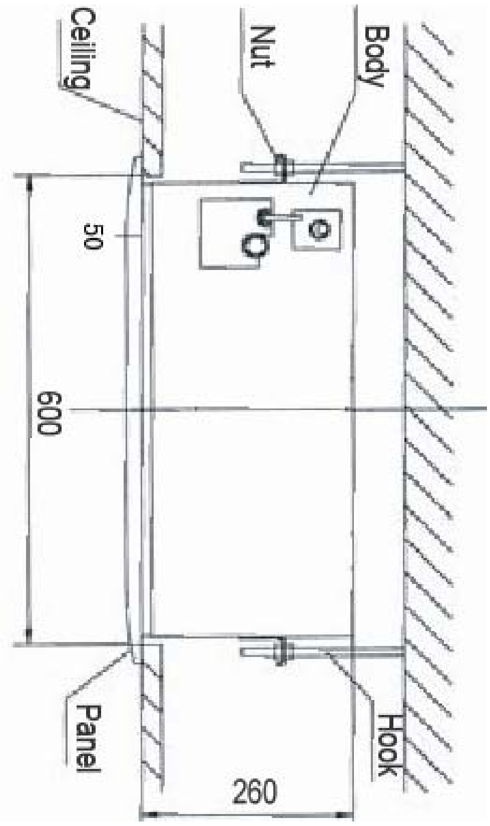
(6) Inside E-box design
The E-box is simply and safely build inside tge indoor unit, of witch ceiling side is 600mm*600mm. It is convenient to install and maintain. Checking the control part is easy, you only need to open the air return grille.

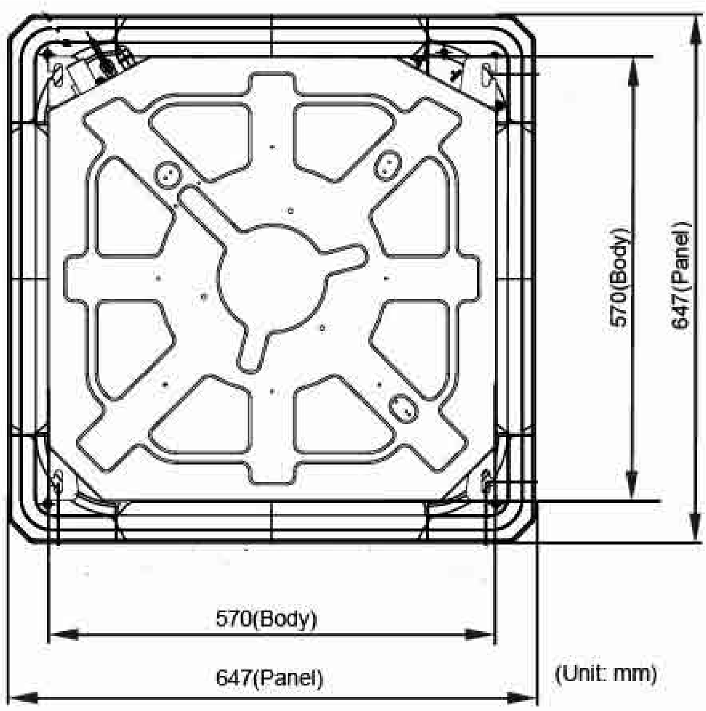
2. Specifications

Model			**HTFI 352 XR**	**HTFI 532 XR**
Power supply		V-ph-Hz	220~240-1-50	220~240-1-50
Cooling	Capacity	kw	3.5	5.30
	Input	W	1038	1640
	Current	A	5.0	8.2
	EER		3.37	3.23
Heating	Capacity	kw	4.00	6.05
	Input	W	1075	1630
	Current	A	5.8	8.2
	COP		3.72	3.71
Indoor fan motor	Model		YDK15-6P	YDK37-4P
	Qty		1	1
	Input	W	47.1/31.1/26.9	80/46/32
	Capacitor	uF	1.5 /450V	2 /400-450V
	Speed(Hi/Mi/Lo)	r/min	780/540/430	1000/710/570
Indoor coil	Number of rows		1	2
	Tube pitch(a)×row pitch(b)	mm	21×13.37	21×13.37
	Fin spacing	mm	1.3	1.3
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia. and type	mm	φ7Inner grooved copper tube	φ7Inner grooved copper tube
	Coil length × height × width	mm	1380×210×13.37	1370×210×26.74
	Number of circuits		2	4
Indoor air flow (Hi/Mi/Lo)		m^3/h	683/530/510	800/710/560
Indoor noise level (sound pressure)		dB(A)	42/41/38	42/41/38
Indoor unit	Dimension (W×H×D)(body)	mm	570×260×570	570×260×570
	Packing (W×H×D)(body)	mm	655×290×655	655×290×655
	Dimension (W×H×D)(panel)	mm	647×50×647	647×50×647
	Packing (W×H×D)(panel)	mm	705×113×705	705×113×705
	Net/Gross weight(body)	kg	16/19	18/21
	Net/Gross weight(panel)	kg	3/5	3/5
Refrigerant type			R410A	R410A
Design pressure		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	φ6.4/φ12.7	φ6.4/φ12.7
Drainage water pipe diameter		mm	ODφ25	ODφ25
Controller			R05/BGE (standard)	R05/BGE (standard)
Operation temperature		℃	17-30	17-30

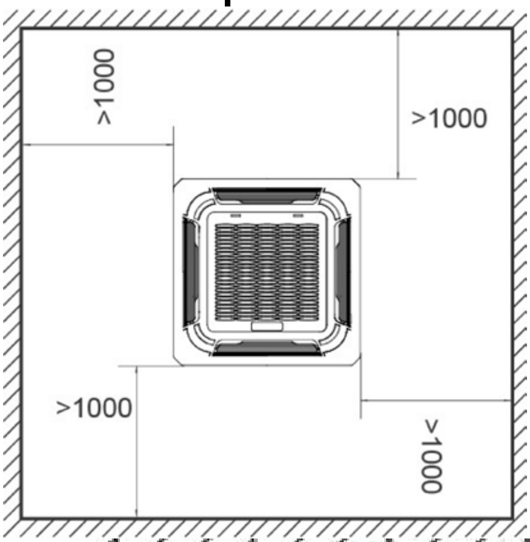
Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 7.5m(horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 7.5m(horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

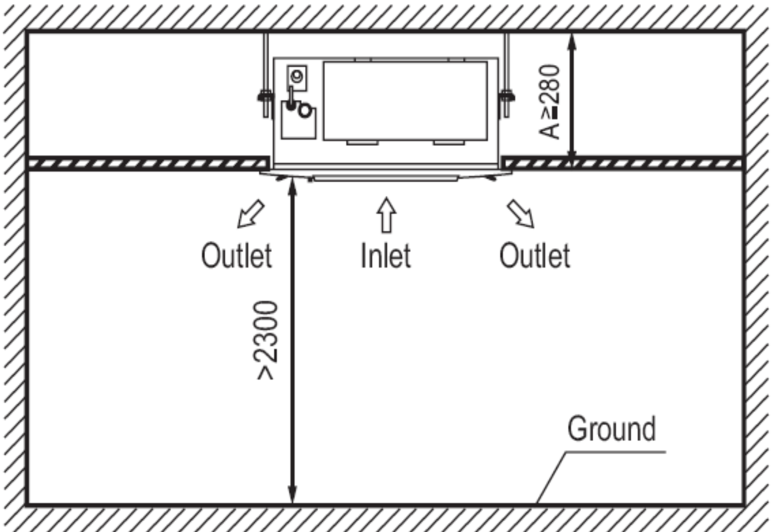
3. Dimensions

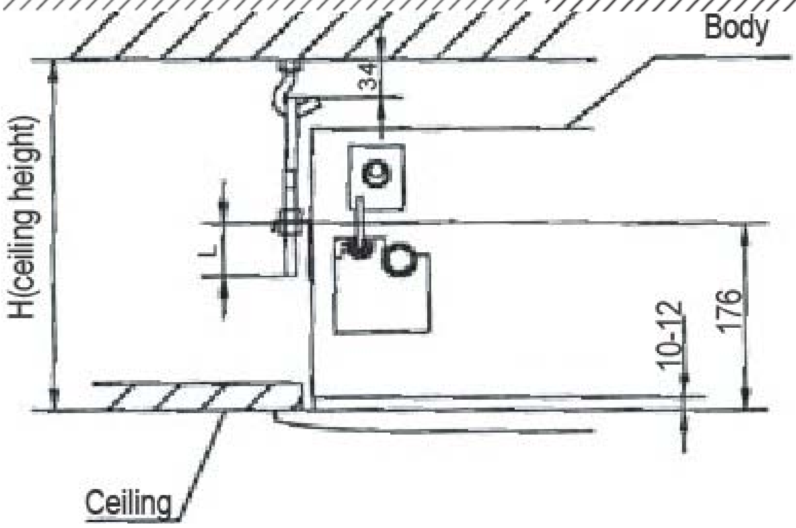




4. Service Space

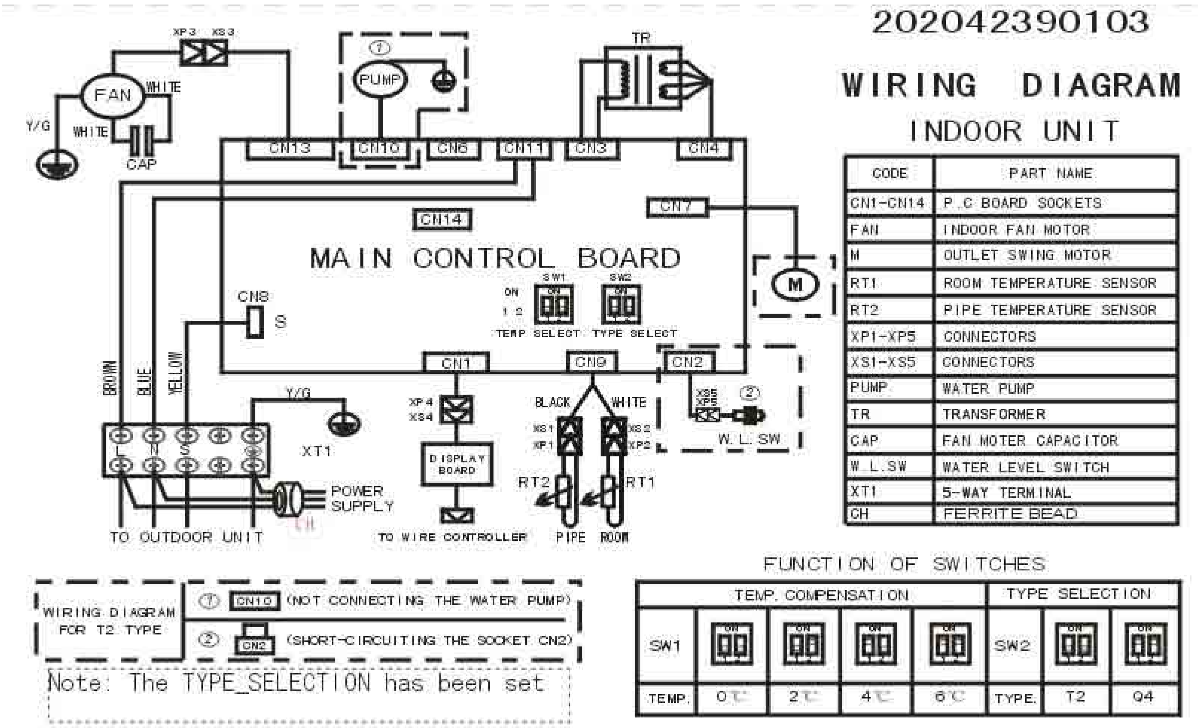




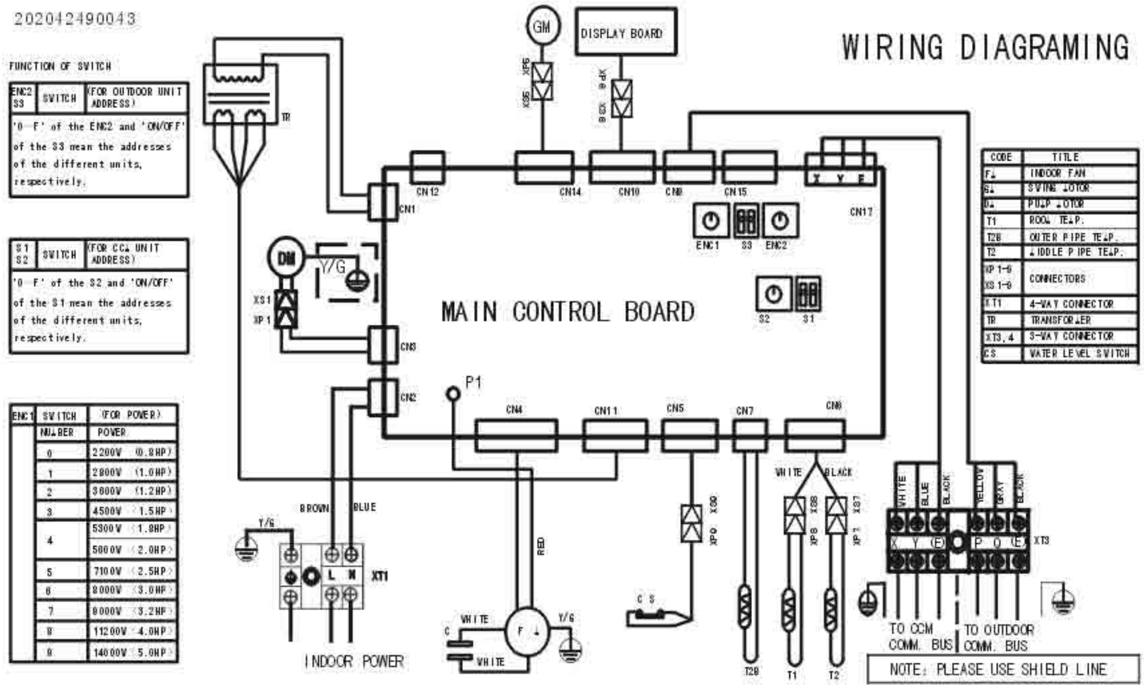


5. Wiring Diagrams

HTFI 352 XR

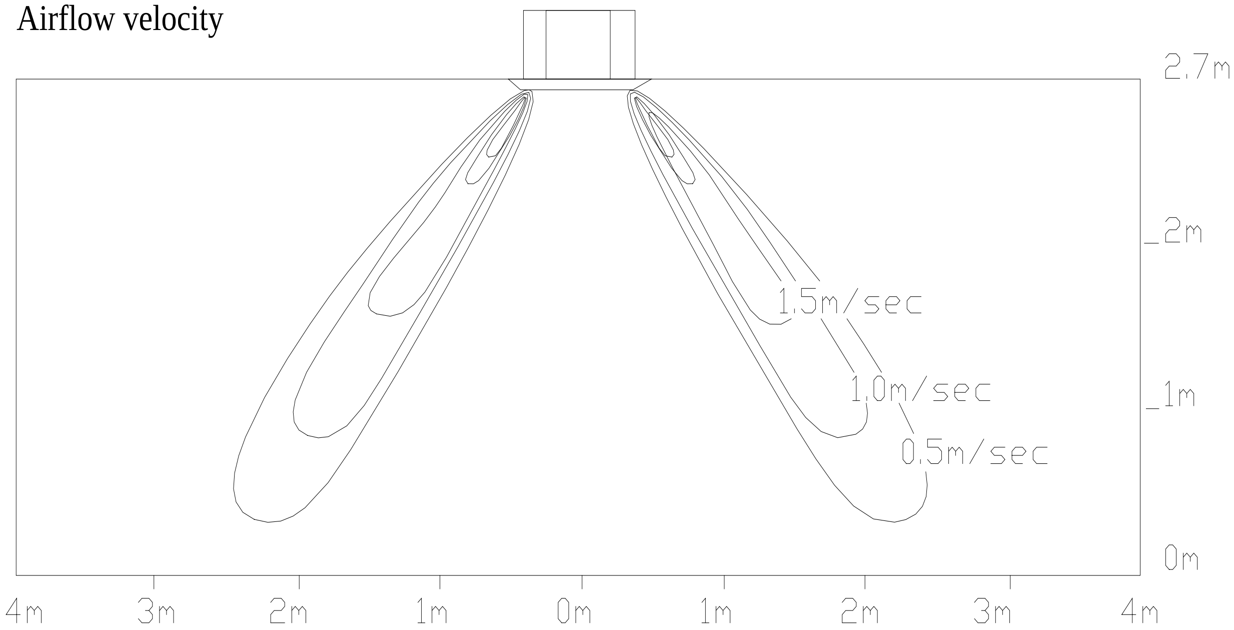


HTFI 532 XR

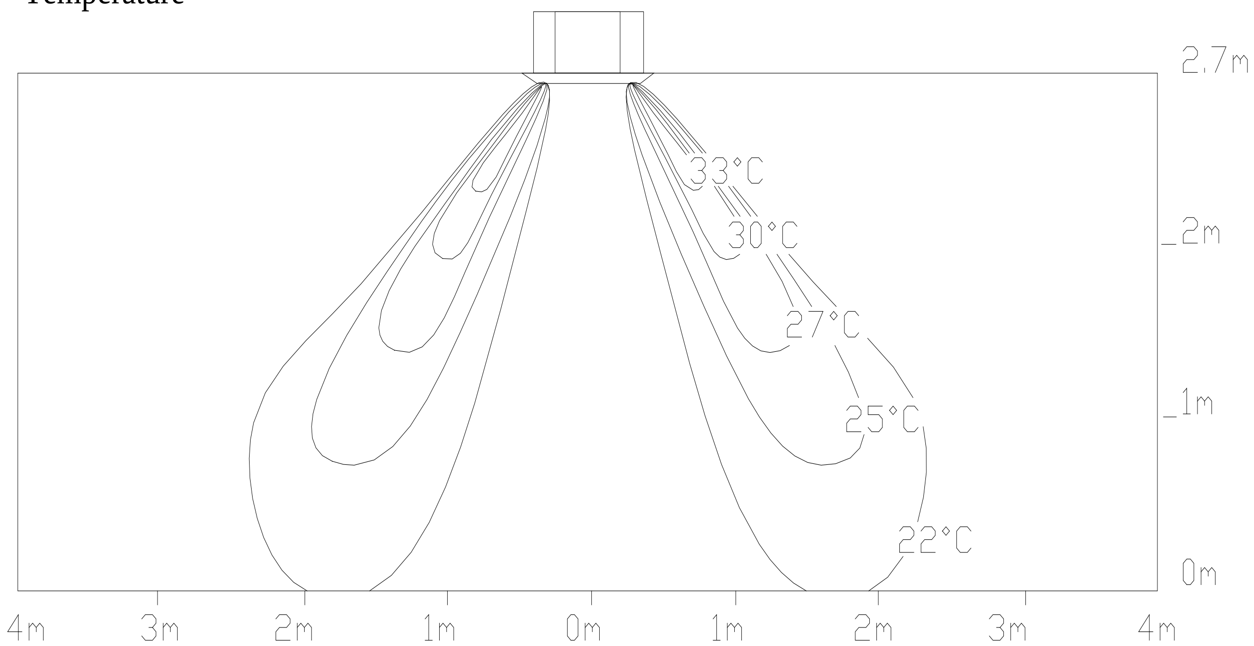


6. Air Velocity and Temperature Distributions

Airflow velocity



Temperature

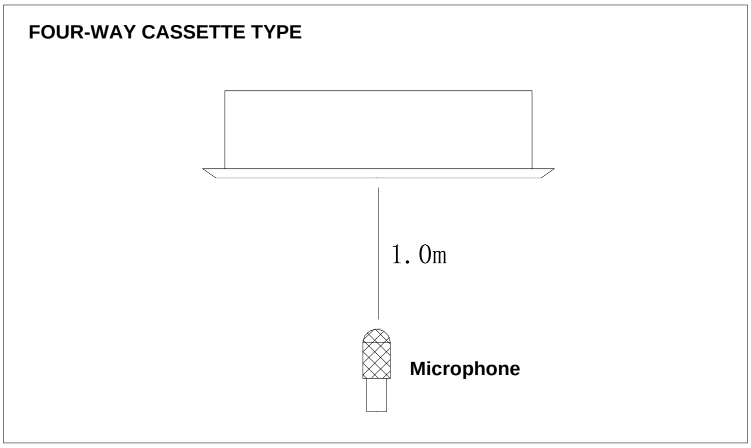


7. Electric Characteristics

Model	Indoor Units				Power Supply
	Hz	MFA	Min.	Max.	MFA
HTFI 352 XR	50	220-240V	198V	254V	20
HTFI 532 XR	50	220-240V	198V	254V	15

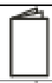
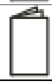
Remark:
MFA: Max. Fuse Amps. (A)

8. Sound Levels



Model	Noise level dB(A)		
	H	M	L
HTFI 352 XR	42	41	38
HTFI 532 XR	42	41	38

9. Accessories

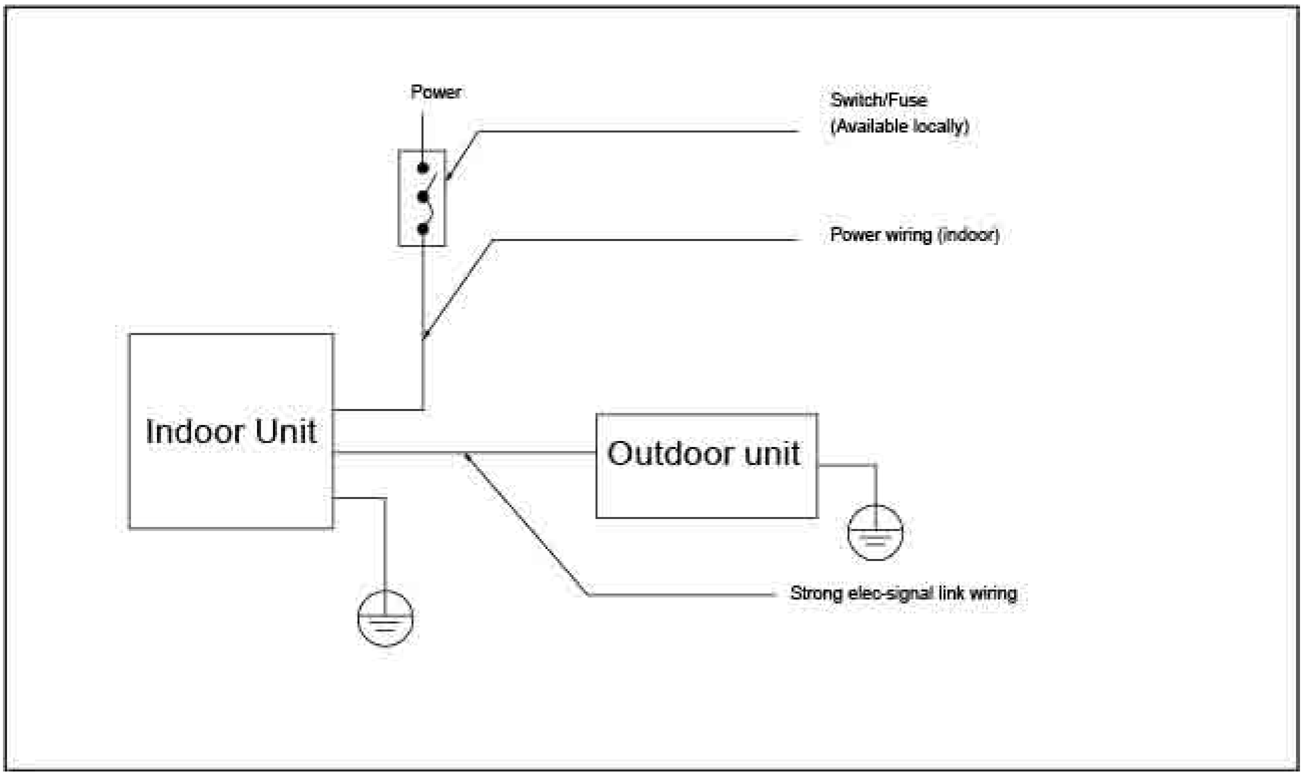
Name	Shape	Quantity
1. Drain joint (Be provided in outdoor unit.)		1
2. Remote controller		1
3. Remote controller holder		1
4. Mounting screw(ST2.9×10-C-H)		2
5. Alkaline dry batteries (AM4)		2
6. Owner's manual		1
7. Installation manual		1

10. The Specification of Power

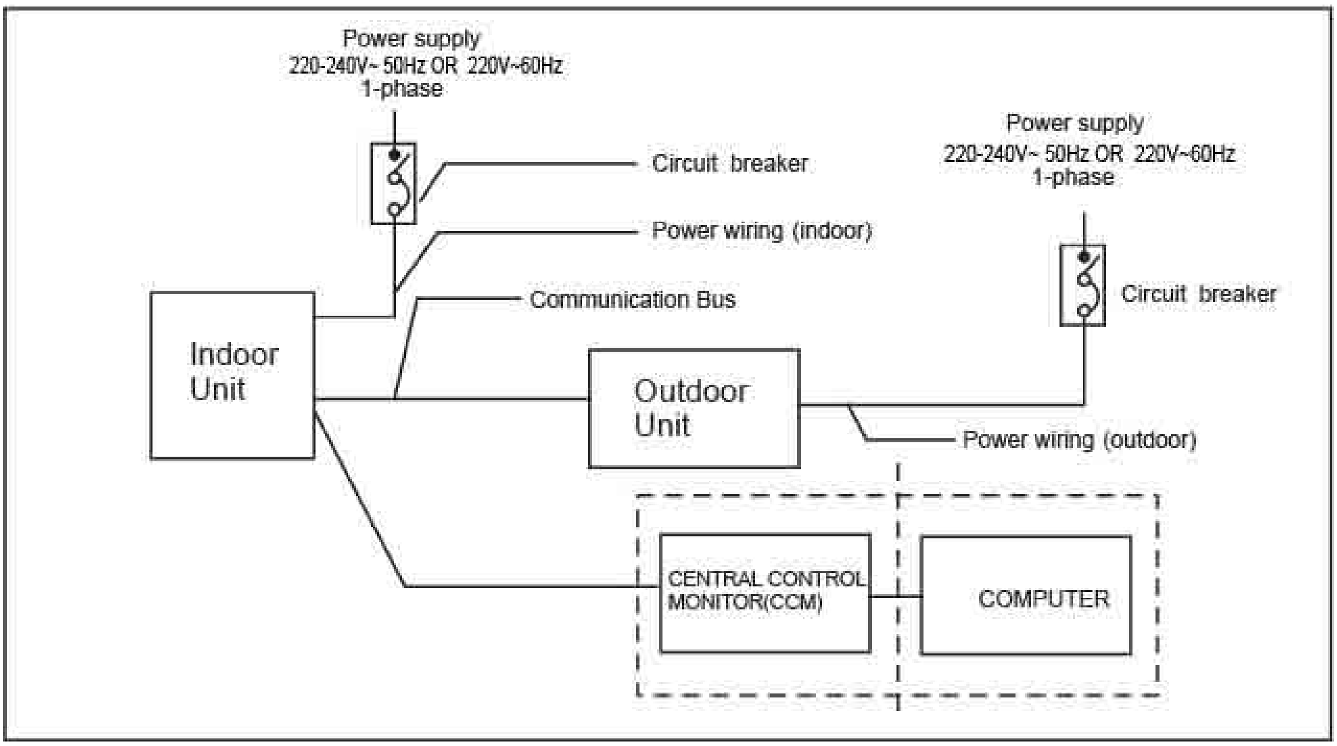
MODEL		12 (with 1-PHASE OUTDOOR UNIT)	18-24 (with 1-PHASE OUTDOOR UNIT)
INDOOR UNIT POWER	PHASE	1-PHASE	1-PHASE
	FREQUENCY AND VOLT	220-240V~， 50Hz	220-240V~ 50Hz / 220V~ 60Hz
	POWER WIRING (mm²)	3×2.5	3X1.0
	CIRCUIT BREAKER (A)	20	15
OUTDOOR UNIT POWER	PHASE	———	1-PHASE
	FREQUENCY AND VOLT	———	220-240V~ 50Hz / 220V~ 60Hz
	POWER WIRING (mm²)	———	3X2.5
	CIRCUIT BREAKER (A)	———	30
INDOOR/OUTDOOR CONNECTION WIRING (WEAK ELECTRIC SIGNAL) (mm²)		———	3X0.5
INDOOR/OUTDOOR CONNECTION WIRING (STRANG ELECTRIC SIGNAL) (mm²)		4×2.5	———

11. Field Wiring

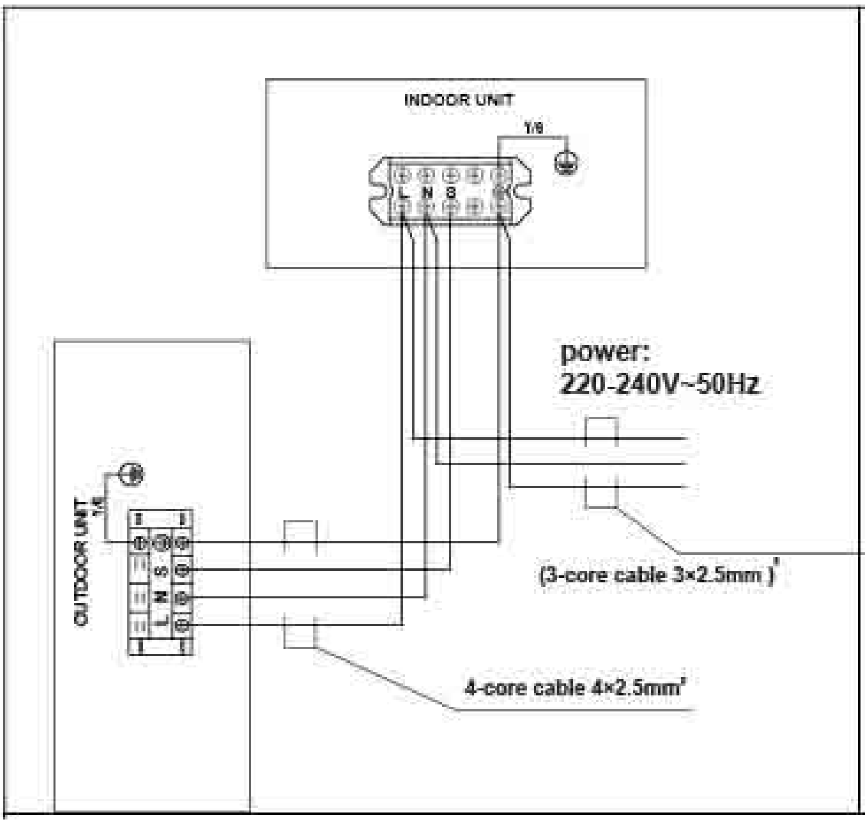
HTFI 352 XR



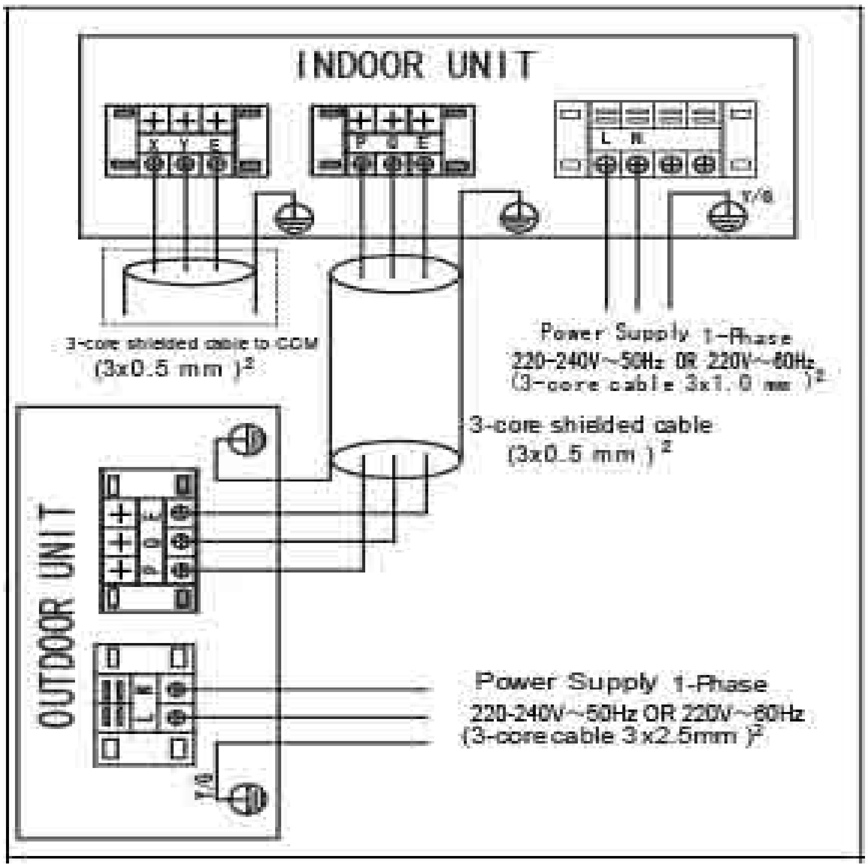
HTFI 532 XR



HTFI 352 XR



HTFI 532 XR

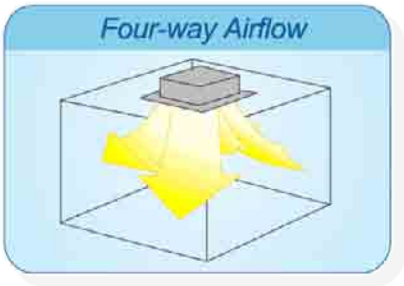


Four-way Cassette Type

1. Features

(1) Low operation noise
—Streamline plate ensures quietness
—Creates natural and comfortable environment

(2) Efficient cooling——Equal, fast and wide range cooling



(3) Excellent performance. The optimal evaporator & sufficient airflow volume guarantees the excellent capacity

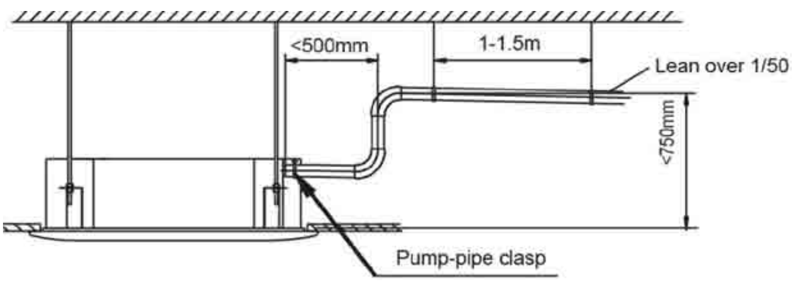
(4) The adoption of the most advanced 3- Dimensional Screw fan
—Reduces the air resistance passing through
—Smoothes the air flow
—Makes air speed distribution to the heat exchange uniform



(5) Fresh air makes life healthier and more comfortable.



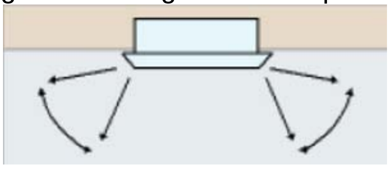
(6) Drainage pump can take up the condenser water to750mm.



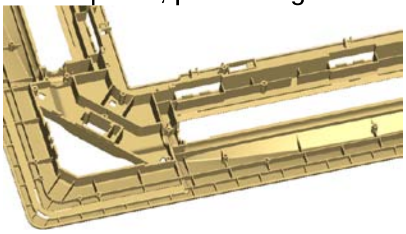
(7) Ultra thin machine body to easy installation and maintenance. 18K~24K:230mm, 36~48K:300mm.



(8) Swing angle of louver
1) Add one more swing motor, one motor driving two louvers. Controlling the interspace of each part, minimizing the angle loss.
2) The swing angle of the first louver are 40~42 degrees and the second louver are 37~38 degrees. New evaporator and inner configuration designed can acquire high heat-exchanger effect.



(10) More strengthening rib design around the panel, preventing the distortion for the panel.

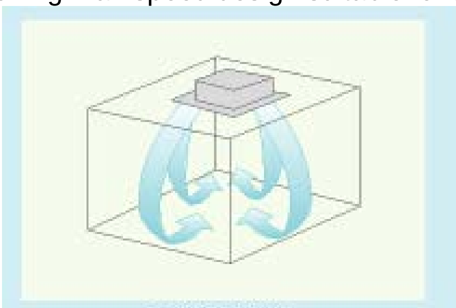


(11) New outlet frame design to make the phenomena of coagulation great improvement: prevent the condensing water from damaging the air guide strip.

(12) Adding rib on the panel of fan outlet, which can avoid the air outlet direct flow to people.



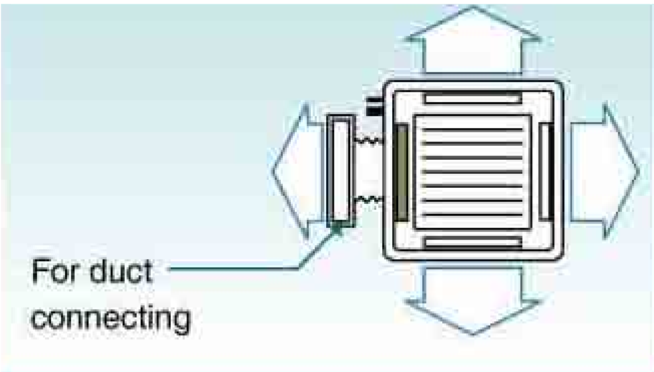
(13) 4 speeds available, optional super high fan speed design suitable for the large building over 3m high.



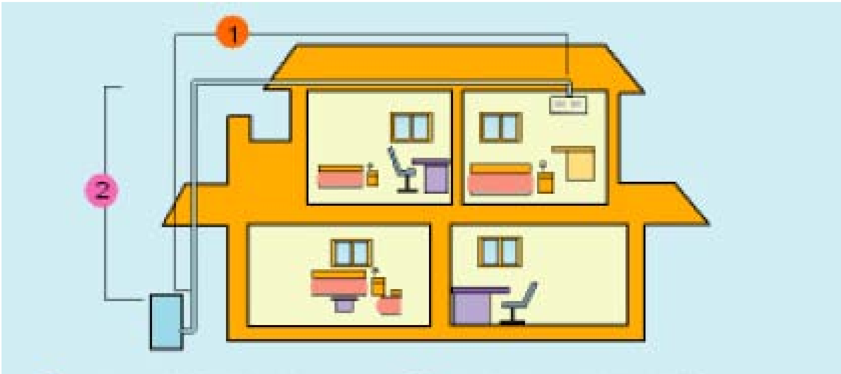
(14) Adding digital tube displaying on the display board. LED can display the Error Code to make the malfunction checking easier.



(15) Reserve spaces for air side-outlet, it is available to connect duct pipe hence air supplying from the four sides to nearby small room..

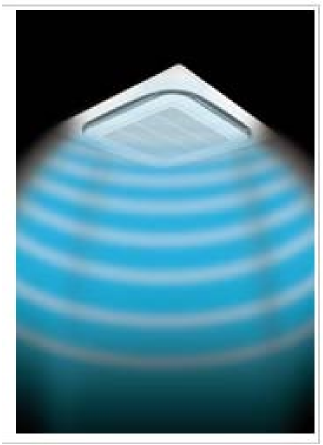


(16) The connecting pipe and drop height is higher. Max. pipe length up to 50m（refer to ①）, and Max. drop height up to 30m（refer to ②）.



(17) Optimal design, smaller Control Box, Space saving and convenient for wiring,
Using fire resistance galvanized steel for E-box material. Metal box make the control part more stable and prevent damaging.

(18) 360° air flow panel : 360° air flow delivery ensures uniform airflow distribution. 60K is standard, the others are optional.



2. Specifications

Indoor Unit	Model		HTBI 711 XR
	Power supply	V-ph-Hz	220~240-1-50
Outdoor Unit	Model		HCKI 712 XR
	Power supply	V-ph-Hz	220~240-1-50
Cooling	Capacity	kw	7.10
	Input	w	2180
	current	A	13.2-9.78-4.26
	EER		3.26
Heating	Capacity	kw	7.80
	Input	w	2090
	current	A	12.23-9.13-4.56
	COP		3.73
Indoor fan motor	Model		YDK80-6E
	Qty		1
	Input	W	120/100/90
	Capacitor	μF	3.5uF/450V
	Speed(Hi/Mi/Lo)	r/min	670/550/400
Indoor coil	Number of rows		2
	Tube pitch(a)×row pitch(b)	mm	21 x13.37
	Fin spacing	mm	1.5
	Fin type (code)		Hydrophilic aluminum
	Tube outside dia. and type	mm	Φ7 Inner grooved copper tube
	Coil length × height × width	mm	1990x168x26.74
	Number of circuits		8
Indoor air flow(Hi/Med/Lo)		m^3/h	1327/1114/871
Indoor noise level (Hi/Med/Lo)		dB(A)	42/41/39
Indoor unit	Dimension (W×H×D)(body)	mm	840x230x840
	Packing (W×H×D)(body)	mm	900x250x900
	Dimension (W×H×D)(panel)	mm	950x55x950
	Packing (W×H×D)(panel)	mm	1035x90x1035
	Net/Gross weight(body)	kg	24/30
	Net/Gross weight(panel)	kg	6/9
Refrigerant type			R410A
Design pressure		MPa	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	φ9.5/φ15.9
Drainage water pipe diameter		mm	ODφ32
Controller			R05/BGE (standard)
Operation temperature		℃	17-30

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. piping: 7.5m (horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. piping: 7.5m (horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

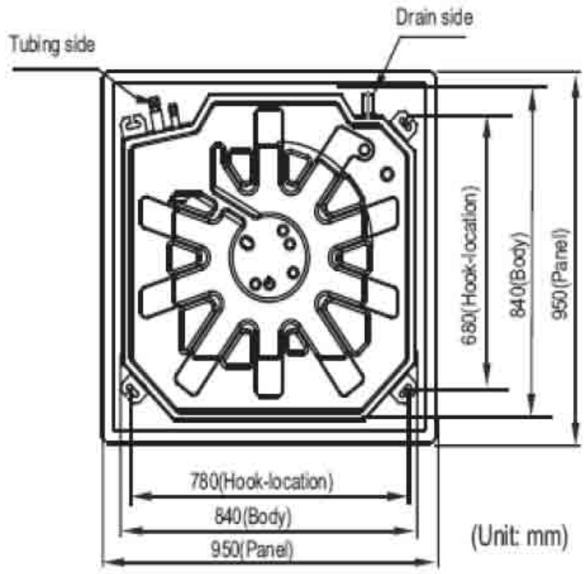
Indoor Unit	Model		HTBI 1081 XR
	Power supply	V-ph-Hz	220~240-1-50
Outdoor Unit	Model		HCSI 1083 XR
	Power supply	V-ph-Hz	380-415-3-50
Cooling	Capacity	kw	10.80
	Input	w	3330
	current	A	7.7-6.0-4.1
	EER		3.24
Heating	Capacity	kw	11.85
	Input	w	3180
	current	A	6.5-4.8-3.2
	COP		3.73
Indoor fan motor	Model		YDK90-6E
	Qty		1
	Input	W	143/116/100
	Capacitor	μF	3.5uF/450V
	Speed(Hi/Mi/Lo)	r/min	770/640/550
Indoor coil	Number of rows		2
	Tube pitch(a)×row pitch(b)	mm	21x13.37
	Fin spacing	mm	1.5
	Fin type (code)		Hydrophilic aluminum
	Tube outside dia. and type	mm	Φ7 Inner grooved copper tube
	Coil length × height × width	mm	1990x252x26.74
	Number of circuits		12
Indoor air flow(Hi/Med/Lo)		m^3/h	1545/1354/1187
Indoor noise level (Hi/Med/Lo)		dB(A)	44/42/41
Indoor unit	Dimension (W×H×D)(body)	mm	840×300×840
	Packing (W×H×D)(body)	mm	900×320×900
	Dimension (W×H×D)(panel)	mm	950x55x950
	Packing (W×H×D)(panel)	mm	1035x90x1035
	Net/Gross weight(body)	kg	30/36
	Net/Gross weight(panel)	kg	6/9
Refrigerant type			R410A
Design pressure		MPa	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	φ9.5/φ15.9
Drainage water pipe diameter		mm	ODφ32
Controller			R05/BGE (standard)
Operation temperature		℃	17-30

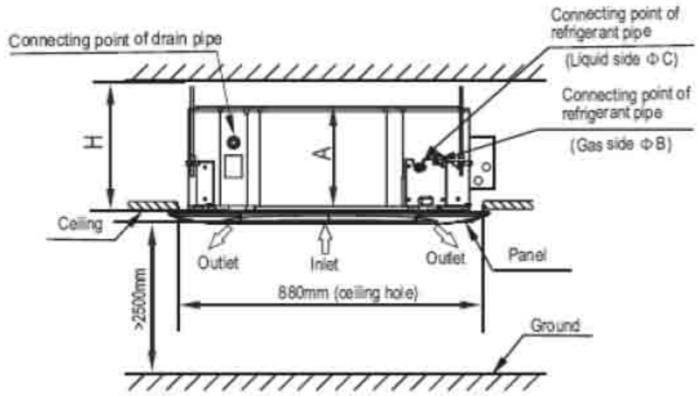
Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. piping: 7.5m (horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. piping: 7.5m (horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Indoor Unit	Model		HTBI 1411 XR
	Power supply	V-ph-Hz	220~240-1-50
Outdoor Unit	Model		HCSI 1413 XR
	Power supply	V-ph-Hz	380-415-3-50
Cooling	Capacity	kw	14.10
	Input	w	4330
	current	A	9.0-6.9-4.0
	EER		3.26
Heating	Capacity	kw	15.40
	Input	w	4150
	current	A	9.0-6.7-3.7
	COP		3.71
Indoor fan motor	Model		YDK90-6E
	Qty		1
	Input	W	143/116/100
	Capacitor	μF	3.5uF/450V
	Speed(Hi/Mi/Lo)	r/min	770/640/550
Indoor coil	Number of rows		2
	Tube pitch(a)×row pitch(b)	mm	21x13.37
	Fin spacing	mm	1.5
	Fin type (code)		Hydrophilic aluminum
	Tube outside dia. and type	mm	Φ7 Inner grooved copper tube
	Coil length × height × width	mm	1990x252x26.74
	Number of circuits		12
Indoor air flow(Hi/Med/Lo)		m^3/h	1545/1354/1187
Indoor noise level (Hi/Med/Lo)		dB(A)	44/42/41
Indoor unit	Dimension (W×H×D)(body)	mm	840×300×840
	Packing (W×H×D)(body)	mm	900×320×900
	Dimension (W×H×D)(panel)	mm	950x55x950
	Packing (W×H×D)(panel)	mm	1035x90x1035
	Net/Gross weight(body)	kg	30/36
	Net/Gross weight(panel)	kg	6/9
Refrigerant type			R410A
Design pressure		MPa	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	φ9.5/φ15.9
Drainage water pipe diameter		mm	ODφ32
Controller			R05/BGE (standard)
Operation temperature		℃	17-30

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. piping: 7.5m (horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. piping: 7.5m (horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

3. Dimensions



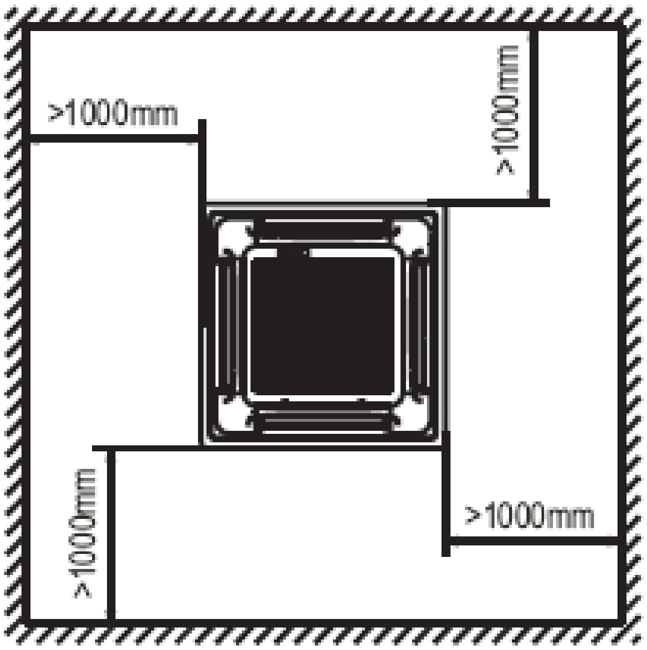


Unit: mm

MODEL(Btu/h)	A	B	C	H
24000	230	Φ15.9	Φ9.5	>260
36000	300	Φ15.9	Φ9.5	>330
48000	300	Φ15.9	Φ9.5	>330

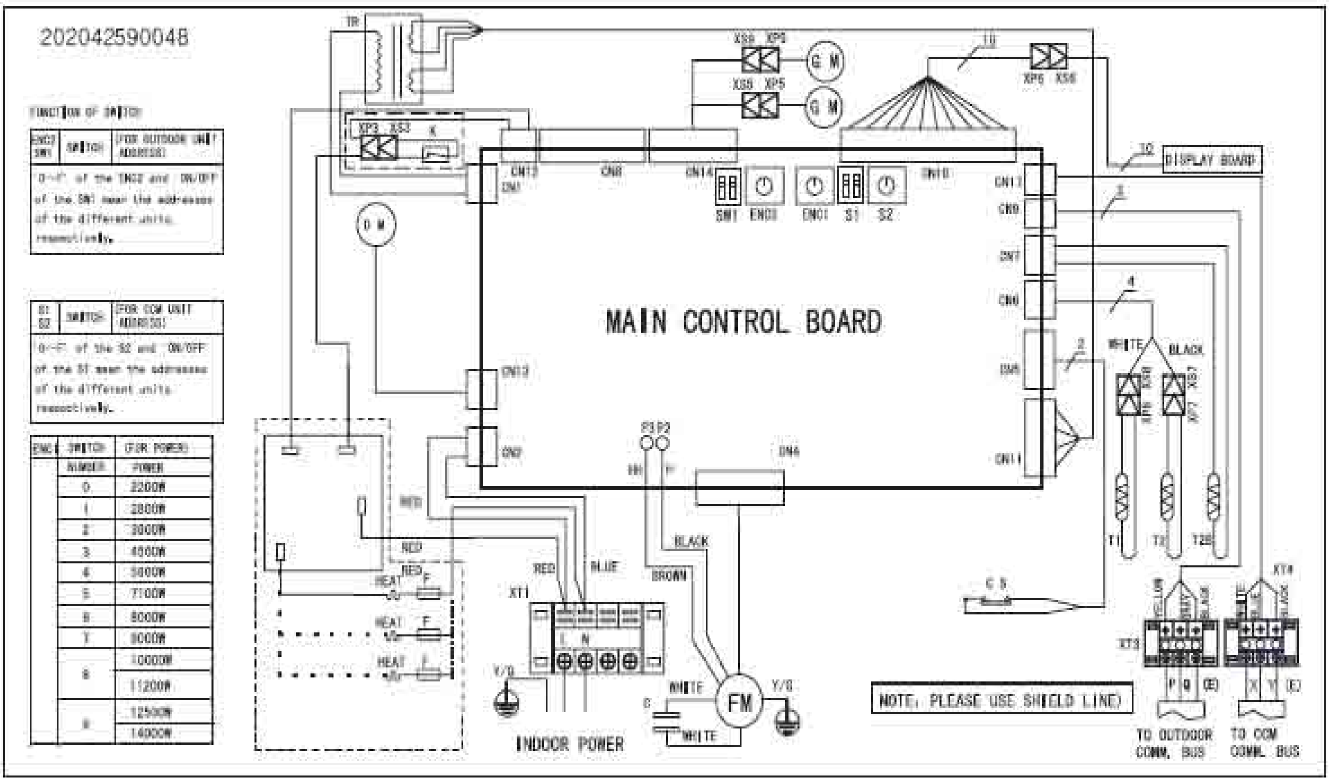
4. Service Space

For 24-48k

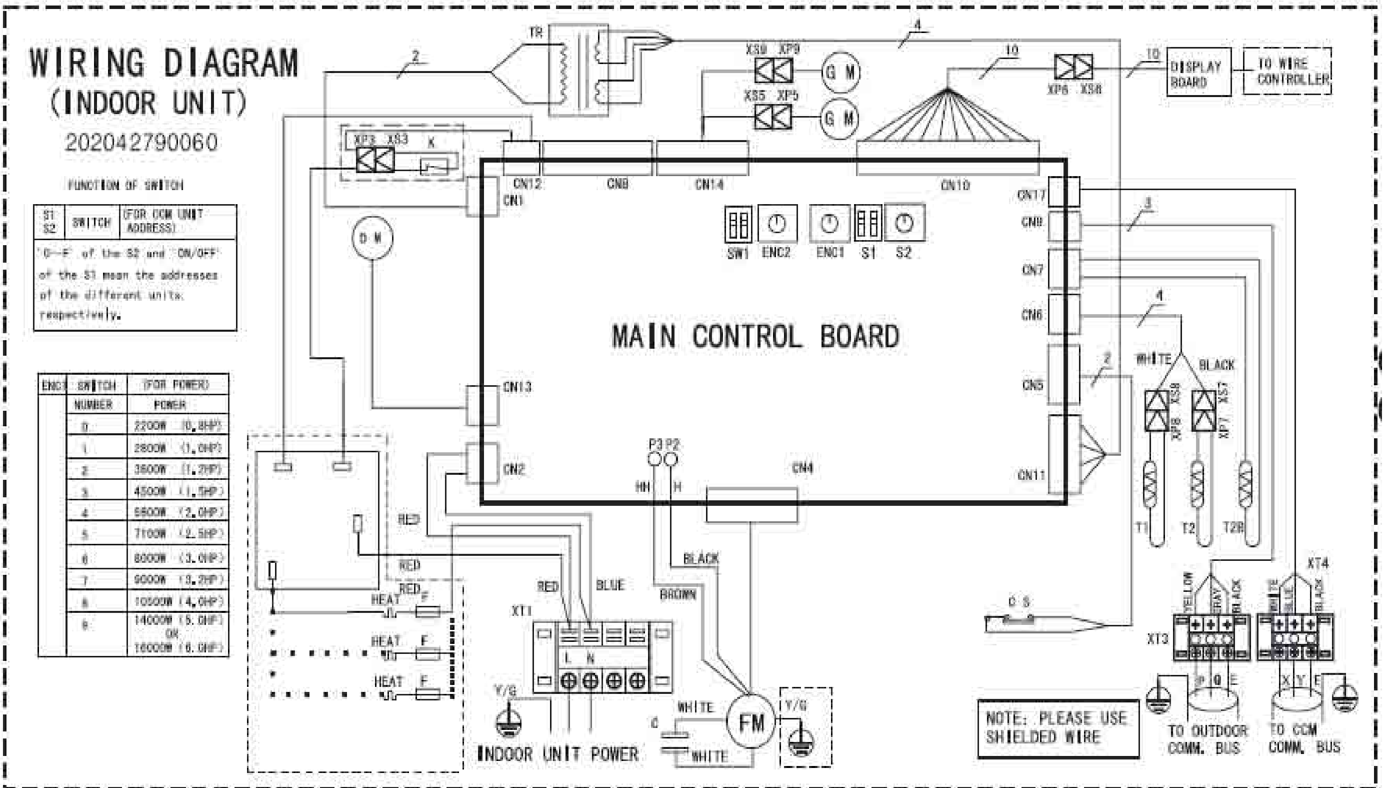


5. Wiring Diagrams

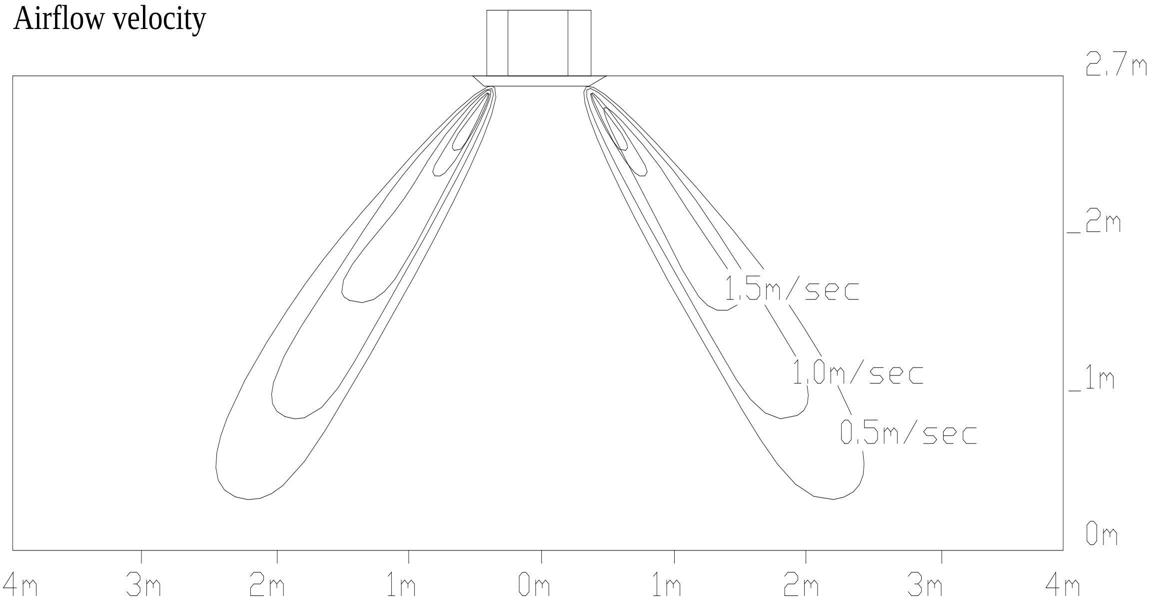
HTBI 711 XR

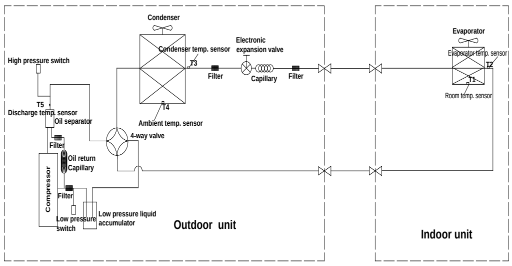


HTBI 1081 XR、HTBI 1411 XR



6. Air Velocity and Temperature Distributions



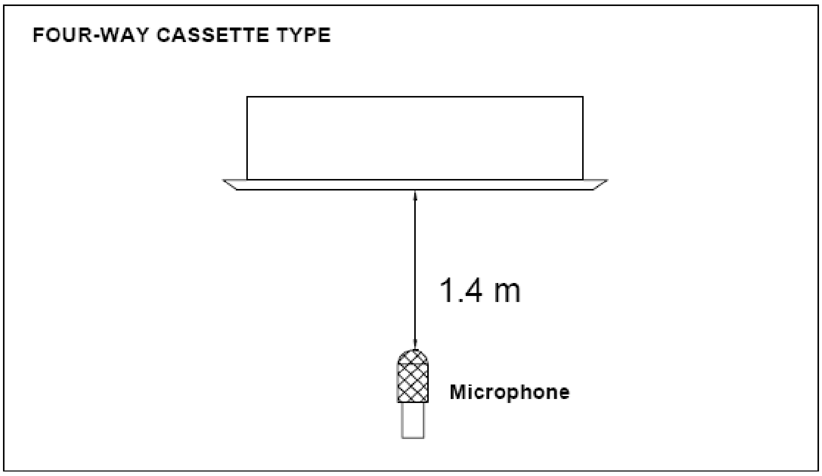


7. Electric Characteristics

Model	Indoor Unit				Power Supply
	Hz	Voltage	Min	Max	MFA
HTBI 711 XR	50	220-240	198	254	15
HTBI 1081 XR	50	220-240	198	254	15
HTBI 1411 XR	50	220-240	198	254	15

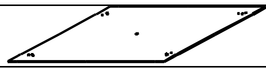
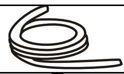
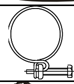
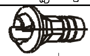
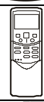
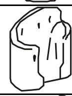
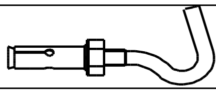
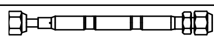
Remark:
MFA: Max. Fuse Amps. (A)

8. Sound Levels

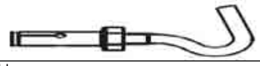
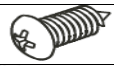
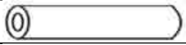
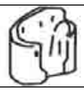
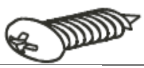
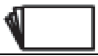


Model	Noise level dB(A)		
	H	M	L
HTBI 711 XR	42	41	39
HTBI 1081 XR	44	42	41
HTBI 1411 XR	44	42	41

9. Accessories

	Name	Shape	Quantity
INSTALLATION FITTINGS	Installation paper board		1
Tubing & Fittings	Soundproof / insulation sheath		2
	Connecting pipe group		1
Drainpipe Fittings	Out-let pipe sheath		1
	Out-let pipe clasp		1
	Drain joint		1
	Seal ring		1
Remote controller & Its Frame	Remote controller & Its Frame		1
	Remote controller holder		1
	Mounting screw(ST2.9×10-C-H)		2
	Alkaline dry batteries (AM4)		2
Others	Owner's manual		1
	Installation manual		1
Installation accessory (The product you have might not be provided the following accessories	Expansible hook		4
	Installation hook		4
	Orifice		1

MCC-60HRDN1

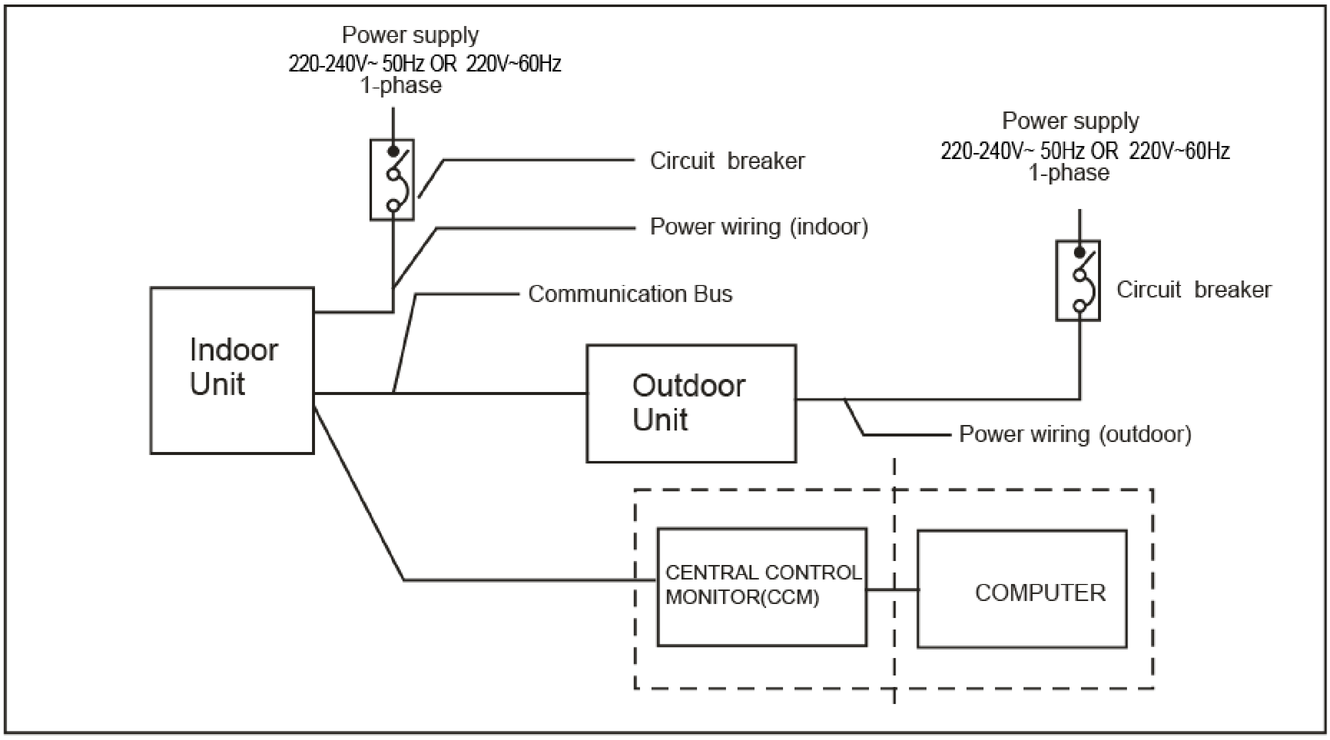
	Name	Shape	Quantity
Installation Fittings	1. Expansible hook		4
	2. Installation hook		4
	3. Installation paper board		1
	4. Bolt M6		4
Tubing & Fittings	5. Soundproof / insulation sheath		2
Drainpipe Fittings	6. Out-let pipe		1
	7. Out-let pipe sheath		1
	8. Out-let pipe clasp		1
	9. Tightening band		20
Remote controller & Its Frame	10. Remote controller		1
	11. Remote controller holder		1
	12. Mounting screw(ST2.9 10-C-H)		2
	13. Remote controller manual		1
	14. Alkaline dry batteries (AM4)		2
Others	15. Owner's manual		1
	16. Installation manual		1
	17. Net work winding		1
Optional fittings	18. Hook for four-way air supply panel		1

10. The Specification of Power

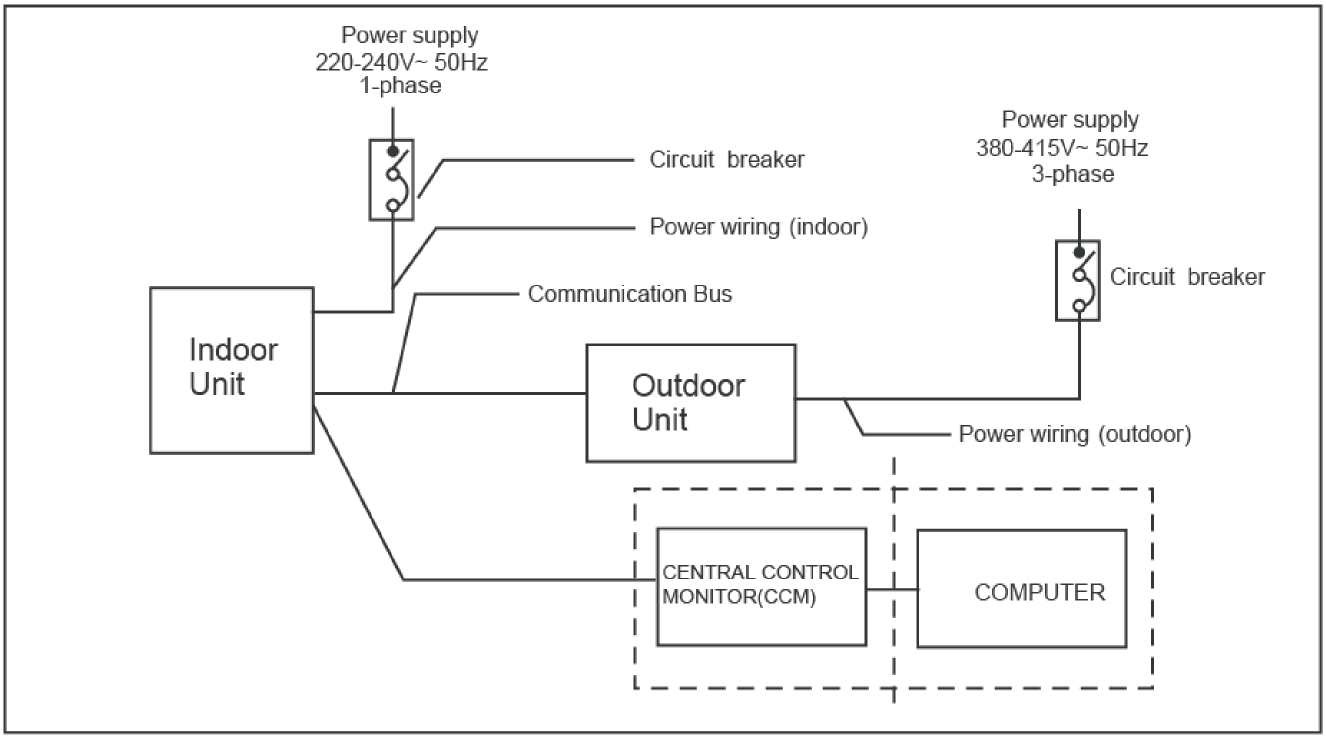
MODEL		18-24 (with 1-PHASE OUTDOOR UNIT)	30-48 (with 1-PHASE OUTDOOR UNIT)	36-60 (wirh 3-PHASE OUTDOOR UNIT)
INDOOR UNIT POWER	PHASE	1-PHASE	1-PHASE	1-PHASE
	FREQUENCY AND VOLT	220-240V~ 50Hz / 220V~ 60Hz	220-240V~ 50Hz / 220V~ 60Hz	220-240V~ 50Hz
	POWER WIRING (mm^2)	3X1.0	3X1.0	3X1.0
	CIRCUIT BREAKER (A)	15	15	15
OUTDOOR UNIT POWER	PHASE	1-PHASE	1-PHASE	3-PHASE
	FREQUENCY AND VOLT	220-240V~ 50Hz / 220V~ 60Hz	220-240V~ 50Hz / 220V~ 60Hz	380-415V~ 50Hz
	POWER WIRING (mm^2)	3X2.5	3X2.5	5X2.5
	CIRCUIT BREAKER (A)	30	40	30
INDOOR/OUTDOOR CONNECTION WIRING (WEAK ELECTRIC SIGNAL) (mm^2)		3X0.5	3X0.5	3X0.5
INDOOR/OUTDOOR CONNECTION WIRING (STRANG ELECTRIC SIGNAL) (mm^2)		———	———	———

11. Field Wiring

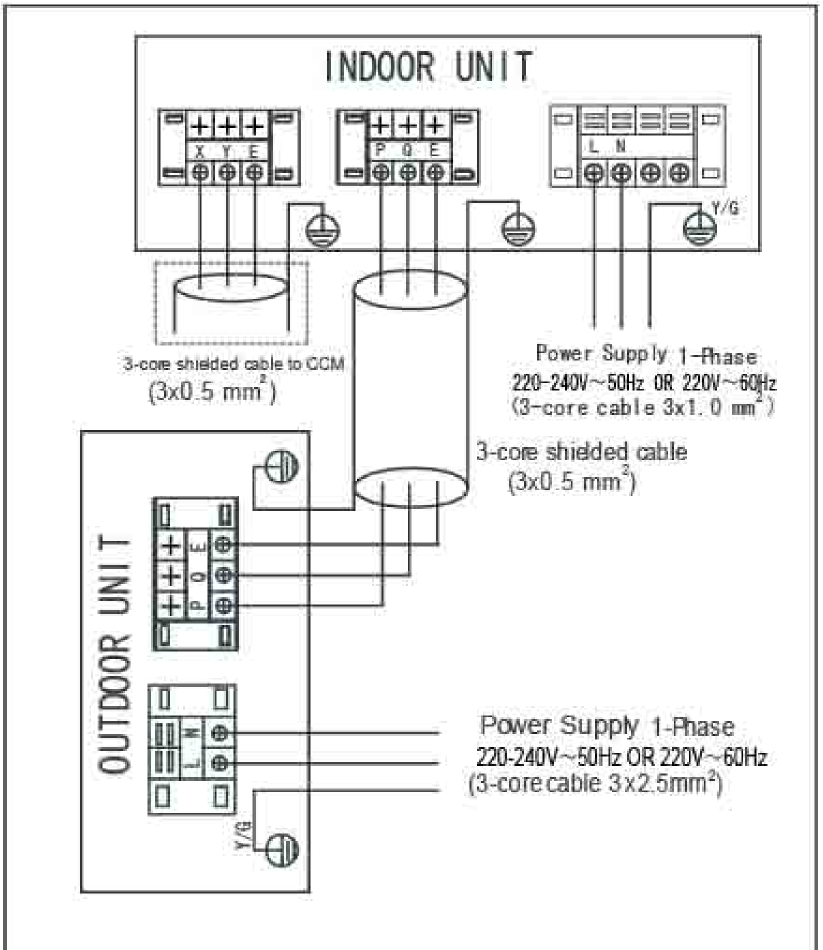
Wiring chart



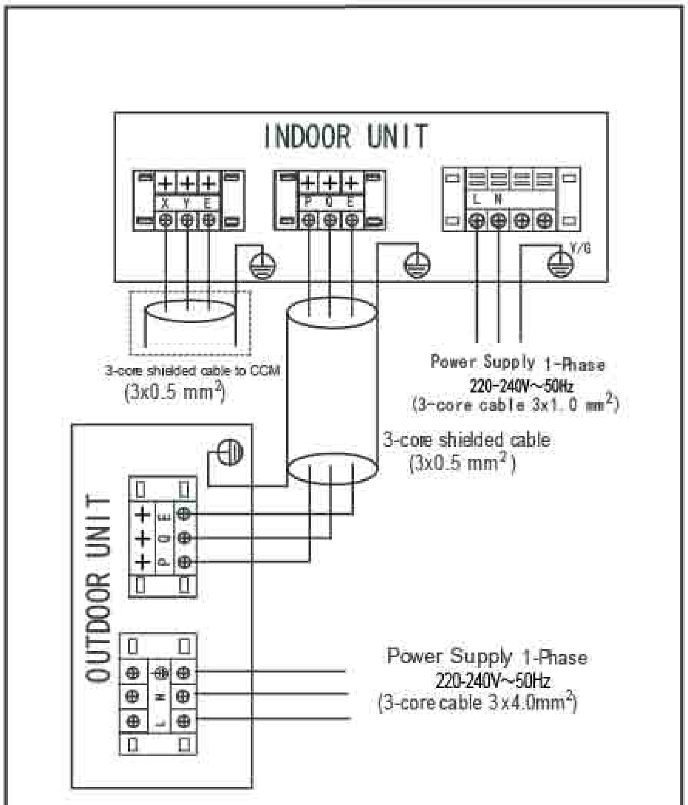
For model 18-48 (with 1-Phase outdoor unit)



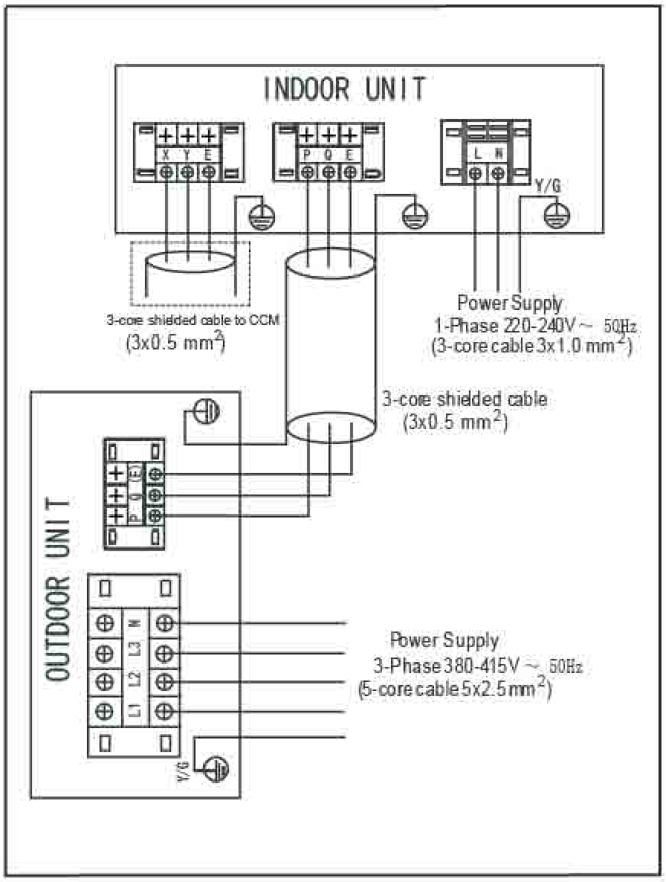
For model 36-60 (with 3-Phase outdoor unit)



For model 18-30 (with 1-Phase outdoor unit)



For model 36-48 (with 1-Phase outdoor unit)



For model 36-60 (with 3-Phase outdoor unit)

Duct Type

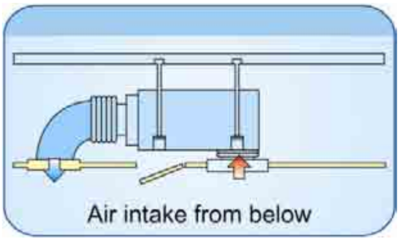
1. Features

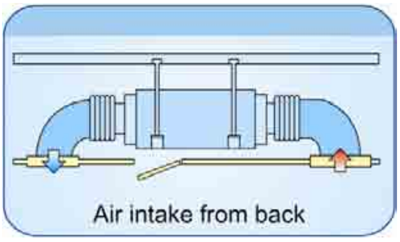
- **New structure design.**



- **Built-in drainage pump**

- **Two air intake ways: from below or rear (standard).**





- **Wire controller is standard.**
- **Three speeds indoor unit.**
- **Fresh air inlet hole is reserved.**

2. Specifications

Indoor Unit	Model		HUCI 351 XR	HUCI 531 XR	HUCI 711 XR
	Power supply	V-ph-Hz	220~240-1-50	220~240-1-50	220~240-1-50
Outdoor Unit	Model		HCKI 351 XR	HCKI 532 XR	HCKI 712 XR
	Power supply	V-ph-Hz	220~240-1-50	220~240-1-50	220~240-1-50
Cooling	Capacity	kw	3.5	5.3	7.10
	Input	w	1050	1620	2180
	Rated current	A	6.5-4.9-2.2	10.4-7.4-3.5	13.7-10.0-4.6
	EER		3.33	3.27	3.26
Heating	Capacity	kw	4.00	5.9	7.8
	Input	w	1065	1590	2090
	Rated current	A	6.4-4.9-2.1	10.7-7.5-3.6	13.9-9.6-4.8
	COP		3.76	3.71	3.73
Indoor fan motor	Model		YSK25-4P	YSK68-4P	YSK74-4P
	Qty		1	1	1
	Input	W	107/65/52	107/65/52	163/93/75
	Capacitor	μF	2μF /450V	3.5μF /450V	3.5μF /450V
	Speed(Hi/Mi/Lo)	r/min	1150/800/700	1150/800/700	1000/750/680
Indoor coil	Number of rows		2	3	4
	Tube pitch(a)×row pitch(b)	mm	21×13.37	21×13.37	21×13.37
	Fin spacing	mm	1.5	1.5	1.5
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia. and type	mm	φ7 Inner grooved copper tube	φ7 Inner grooved copper tube	φ7 Inner grooved copper tube
	Coil length × height × width	mm	735×252×26.74	735×252×40.11	735×252×53.48
	Number of circuits		3	4	6
Indoor air flow(Hi/Med/Lo)		m^3/h	800/610/520	1170/770/650	1400/1100/1000
Indoor external static pressure (Hi)		Pa	40	70	70
Indoor noise level (Hi/Med/Lo)		dB(A)	37/30/26	44/36/33	45/43/41
Indoor unit	Dimension (W×H×D)	mm	920x210x635	920x210x635	920x270x635
	Packing (W×H×D)	mm	1135x290x655	1135x290x655	1135x350x655
	Net/Gross weight	kg	25/30	26/31	30/35
Refrigerant type			R410A	R410A	R410A
Design pressure		MPa	4.2/1.5	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	φ6.4/φ12.7	φ6.4/φ12.7	φ9.5/φ15.9
Drainage water pipe diameter		mm	ODφ25	ODφ25	ODφ25
Controller			KJR-10B/DP(T)-E	KJR-10B/DP(T)-E	KJR-10B/DP(T)-E
Operation temperature		℃	17-30	17-30	17-30

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. piping: 7.5m (horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. piping: 7.5m (horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Indoor Unit	Model		HUCI 1081 XR
	Power supply	V-ph-Hz	220~240-1-50
Outdoor Unit	Model		HCSI 1083 XR
	Power supply	V-ph-Hz	380~415-3-50
Cooling	Capacity	kw	10.80
	Input	w	3320
	Rated current	A	7.0-5.2-2.3
	EER		3.25
Heating	Capacity	kw	11.85
	Input	w	3160
	Rated current	A	7.8-5.3-2.6
	COP		3.75
Indoor fan motor	Model		YSK140-4P
	Qty		1
	Input	W	291/168/138
	Capacitor	μF	10μF /450V
	Speed(Hi/Mi/Lo)	r/min	1070/790/710
Indoor coil	Number of rows		4
	Tube pitch(a)×row pitch(b)	mm	21×13.37
	Fin spacing	mm	1.5
	Fin type (code)		Hydrophilic aluminum
	Tube outside dia. and type	mm	φ7 Inner grooved copper tube
	Coil length × height × width	mm	955×336×53.48
	Number of circuits		8
Indoor air flow(Hi/Med/Lo)		m^3/h	2270/1890/1650
Indoor external static pressure (Hi)		Pa	80
Indoor noise level (Hi/Med/Lo)		dB(A)	46/44/42
Indoor unit	Dimension (W×H×D)	mm	1140x270x775
	Packing (W×H×D)	mm	1355x350x795
	Net/Gross weight	kg	43/50
Refrigerant type			R410A
Design pressure		MPa	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	φ9.5/φ15.9
Drainage water pipe diameter		mm	ODφ25
Controller			KJR-10B/DP(T)-E
Operation temperature		℃	17-30

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. piping: 7.5m (horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. piping: 7.5m (horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

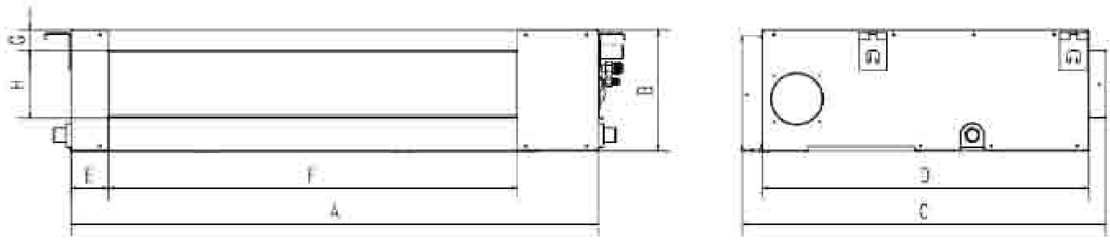
Indoor Unit	Model		HUCI 1411 XR	HUCI 1761 XR
	Power supply	V-ph-Hz	220~240-1-50	220~240-1-50
Outdoor Unit	Model		HCSI 1413 XR	HCSI 1762 XR
	Power supply	V-ph-Hz	380~415-3-50	380~415-3-50
Cooling	Capacity	kw	14.10	17.60
	Input	w	4340	5360
	Rated current	A	8.9-7.0-3.0	10.0-8.0-4.1
	EER		3.25	3.28
Heating	Capacity	kw	15.40	18.50
	Input	w	4140	4960
	Rated current	A	9.2-6.7-3.1	10.6-7.8-3.5
	COP		3.72	3.73
Indoor fan motor	Model		YSK170-4P	YSK180-4P
	Qty		1	1
	Input	W	356/201/152	355/223/173
	Capacitor	μF	10μF /450V	10μF /450V
	Speed(Hi/Mi/Lo)	r/min	1070/750/650	1080/830/710
Indoor coil	Number of rows		4	4
	Tube pitch(a)×row pitch(b)	mm	21×13.37	21×13.37
	Fin spacing	mm	1.5	1.5
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia. and type	mm	φ7 Inner grooved copper tube	φ7 Inner grooved copper tube
	Coil length × height × width	mm	955×336×53.48	1030×378×53.48
	Number of circuits		8	8
Indoor air flow(Hi/Med/Lo)		m^3/h	3010/2410/1940	3150/2510/1990
Indoor external static pressure (Hi)		Pa	100	100
Indoor noise level (Hi/Med/Lo)		dB(A)	47/45/43	47/45/43
Indoor unit	Dimension (W×H×D)	mm	1200x300x865	1200x300x865
	Packing (W×H×D)	mm	1385x373x920	1385x373x920
	Net/Gross weight	kg	50/59	50/59
Refrigerant type			R410A	R410A
Design pressure		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	φ9.5/φ15.9	φ9.5/φ15.9
Drainage water pipe diameter		mm	ODφ25	ODφ25
Controller			KJR-10B/DP(T)-E	KJR-10B/DP(T)-E
Operation temperature		℃	17-30	17-30

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. piping: 7.5m (horizontal);
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. piping: 7.5m (horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

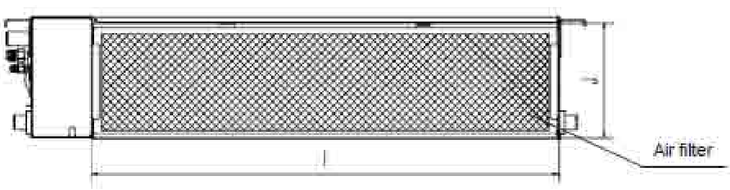
3. Dimensions

Outline dimension and air outlet opening size

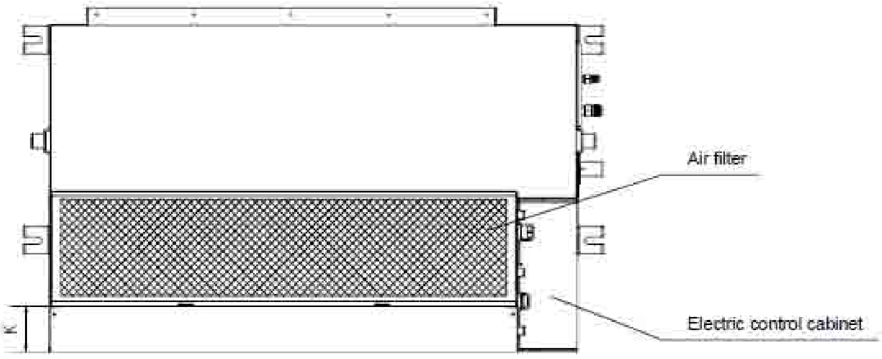
Unit: mm



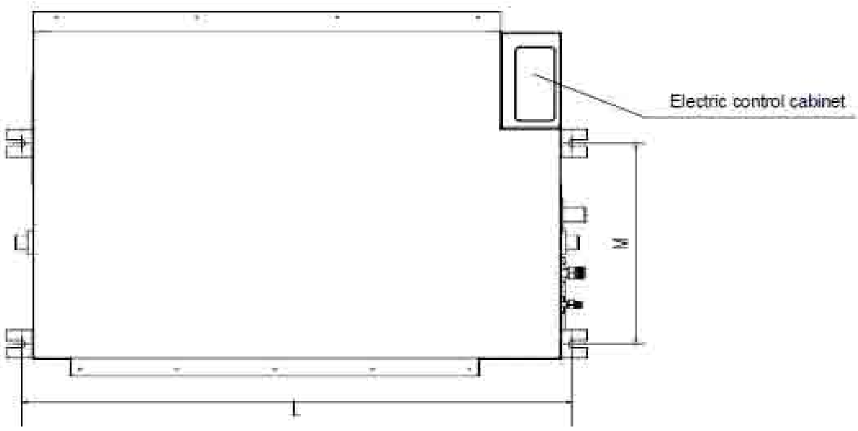
Air return opening size



Position size of descensional ventilation opening



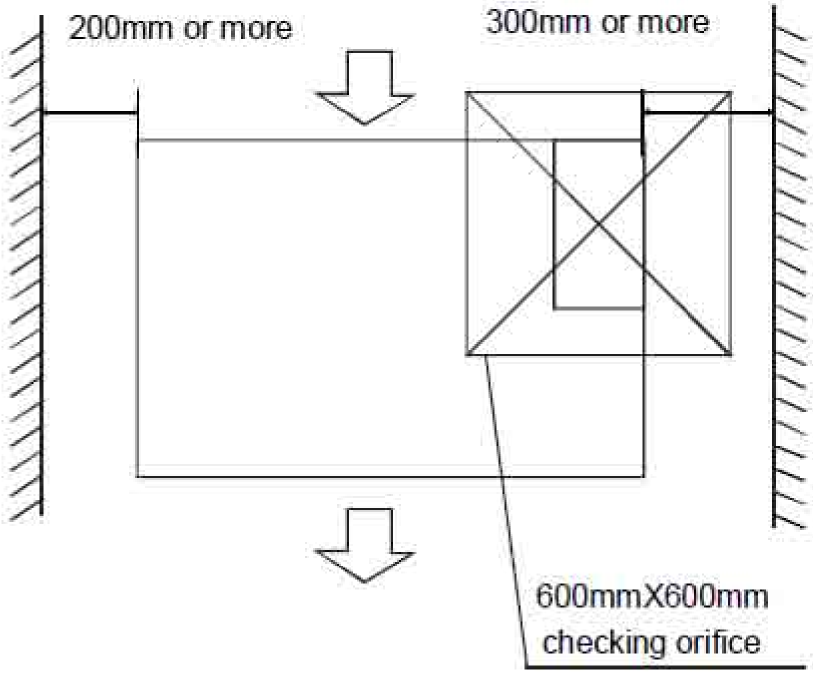
Size of mounted lug



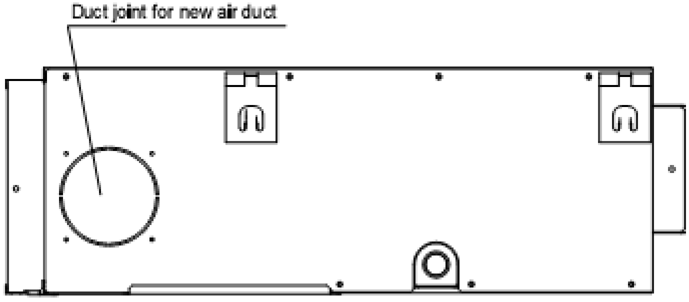
Capacity (KBtu)	Outline dimension(mm)				Air outlet o pening size				Air return opening size			Size of outline dimension mounted plug	
	A	B	C	D	E	F	G	H	I	J	K	L	M
12/18	920	210	635	570	65	713	35	119	815	200	80	960	350
24	920	270	635	570	65	713	35	179	815	260	20	960	350
30/36	1140	270	775	710	65	933	35	179	1035	260	20	1180	490
48/60	1200	300	865	800	80	968	40	204	1094	288	45	1240	500

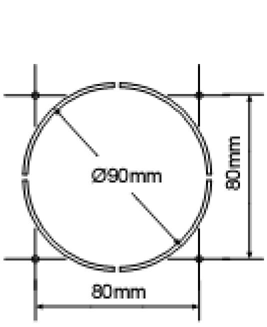
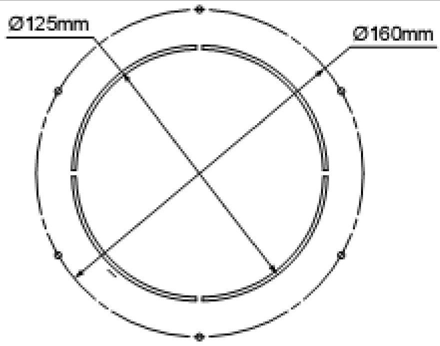
4. Service Space

Ensure enough space required for installation and maintenance.



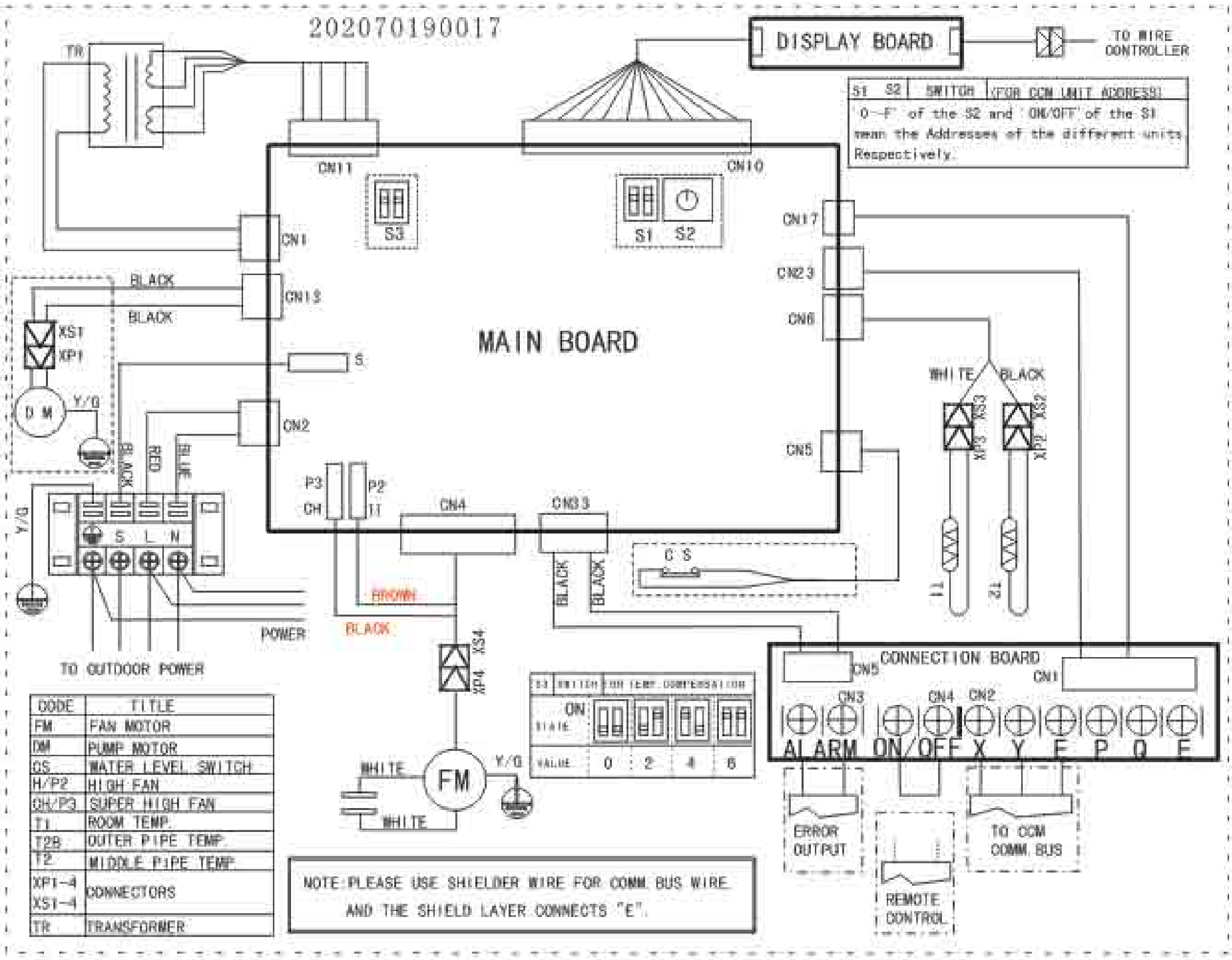
All the indoor units reserve the hole to joint the fresh air pipe. The hole size as following:



MODLE	
12-24	30-60
	

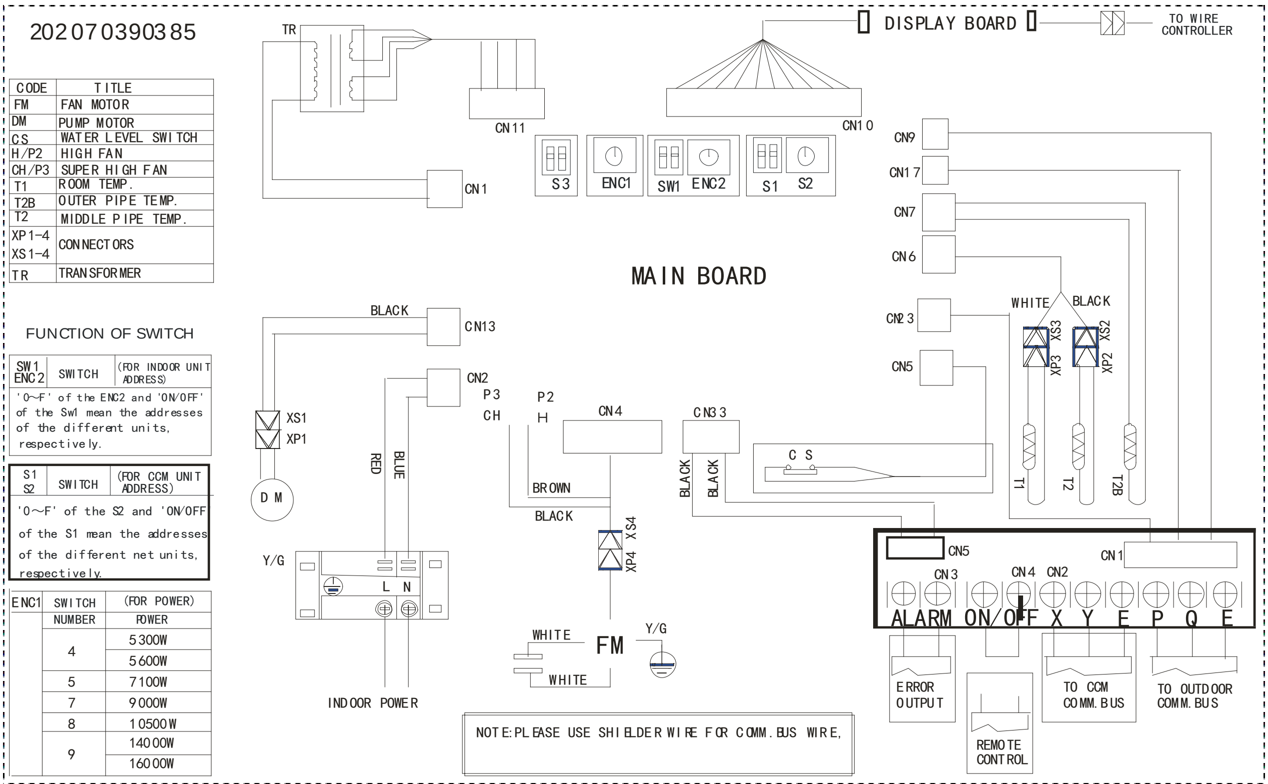
5. Wiring Diagrams

HUCI 351 XR



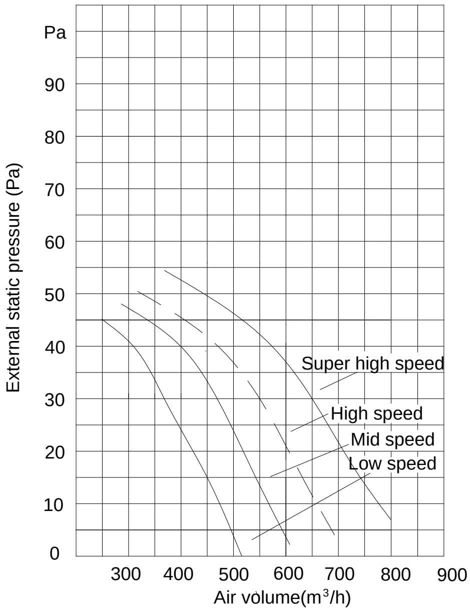
HUCI 531 XR

HUCI 1081 XR HUCI 1411 XR HUCI 1761 XR

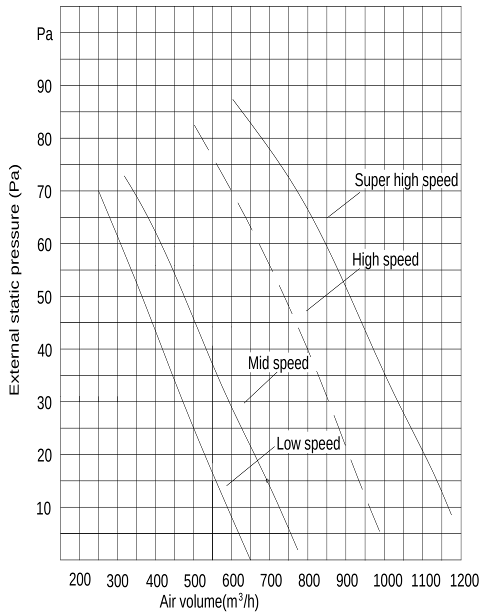


6. Static Pressure

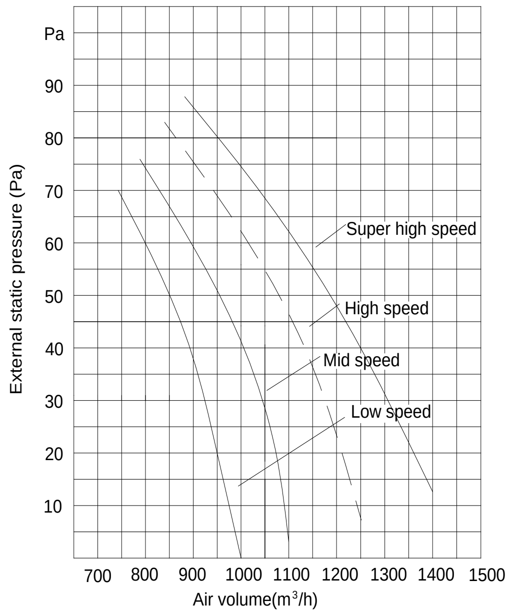
HUCI 351 XR



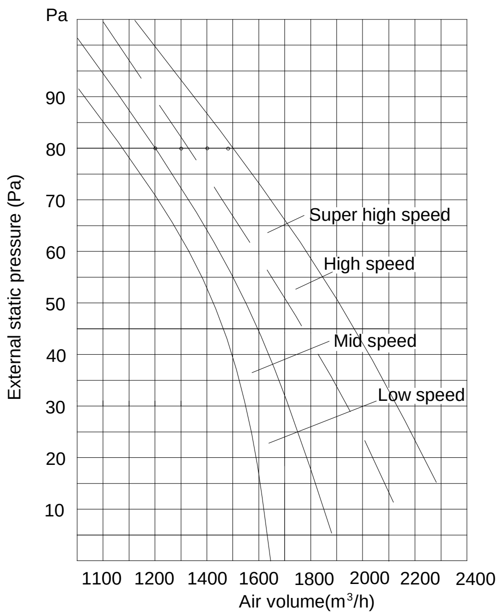
HUCI 531 XR



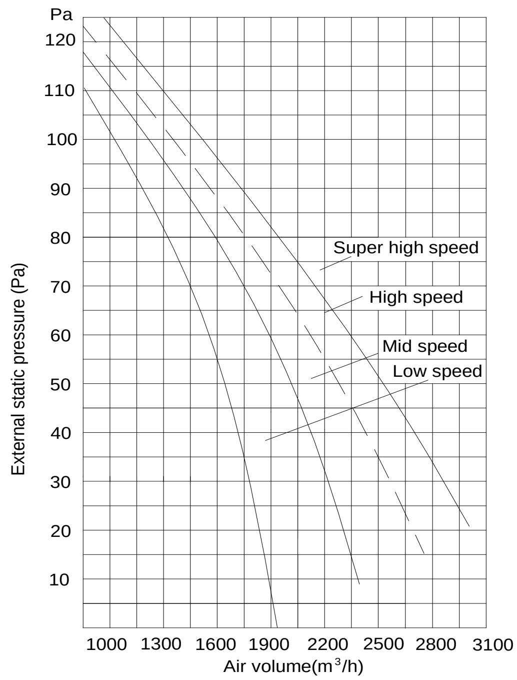
HUCI 711 XR



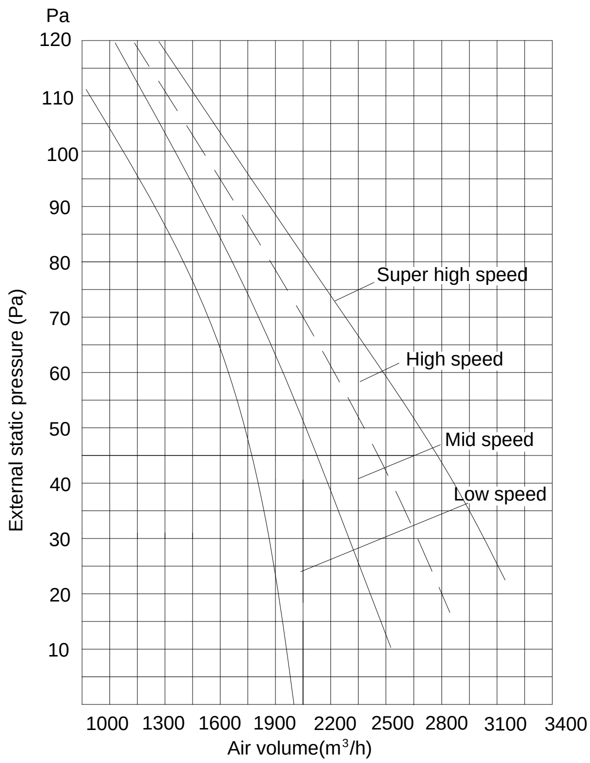
HUCI 1081 XR



HUCI 1411 XR



HUCI 1761 XR

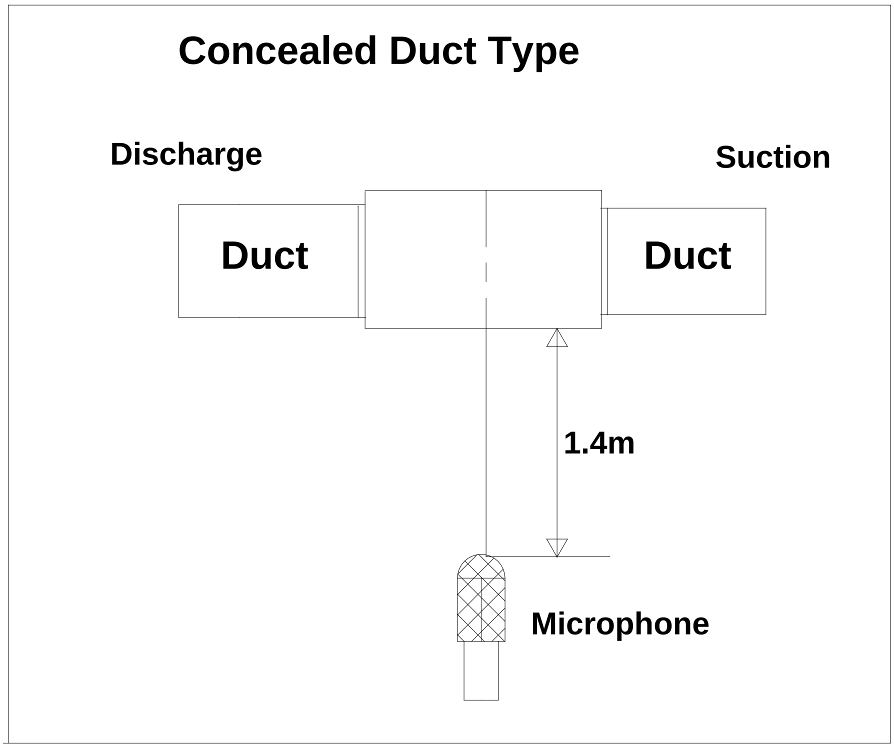


7. Electric Characteristics

Model	Indoor Unit				Power Supply
	Hz	Voltage	Min.	Max.	MFA
HUCI 351 XR	50	220-240	207	253	15
HUCI 531 XR	50	220-240	207	253	15
HUCI 711 XR	50	220-240	207	253	15
HUCI 1081 XR	50	220-240	207	253	15
HUCI 1411 XR	50	220-240	207	253	15
HUCI 1761 XR	50	220-240	207	253	15

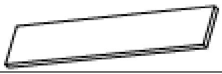
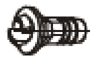
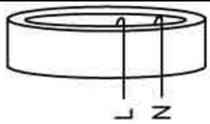
Remark:
MFA: Max. Fuse Amps. (A)

8. Sound Levels



Model	Noise level dB(A)		
	H	M	L
HUCI 351 XR	37	30	26
HUCI 531 XR	44	36	33
HUCI 711 XR	45	43	41
HUCI 1081 XR	46	44	42
HUCI 1411 XR	47	45	43
HUCI 1761 XR	47	45	43

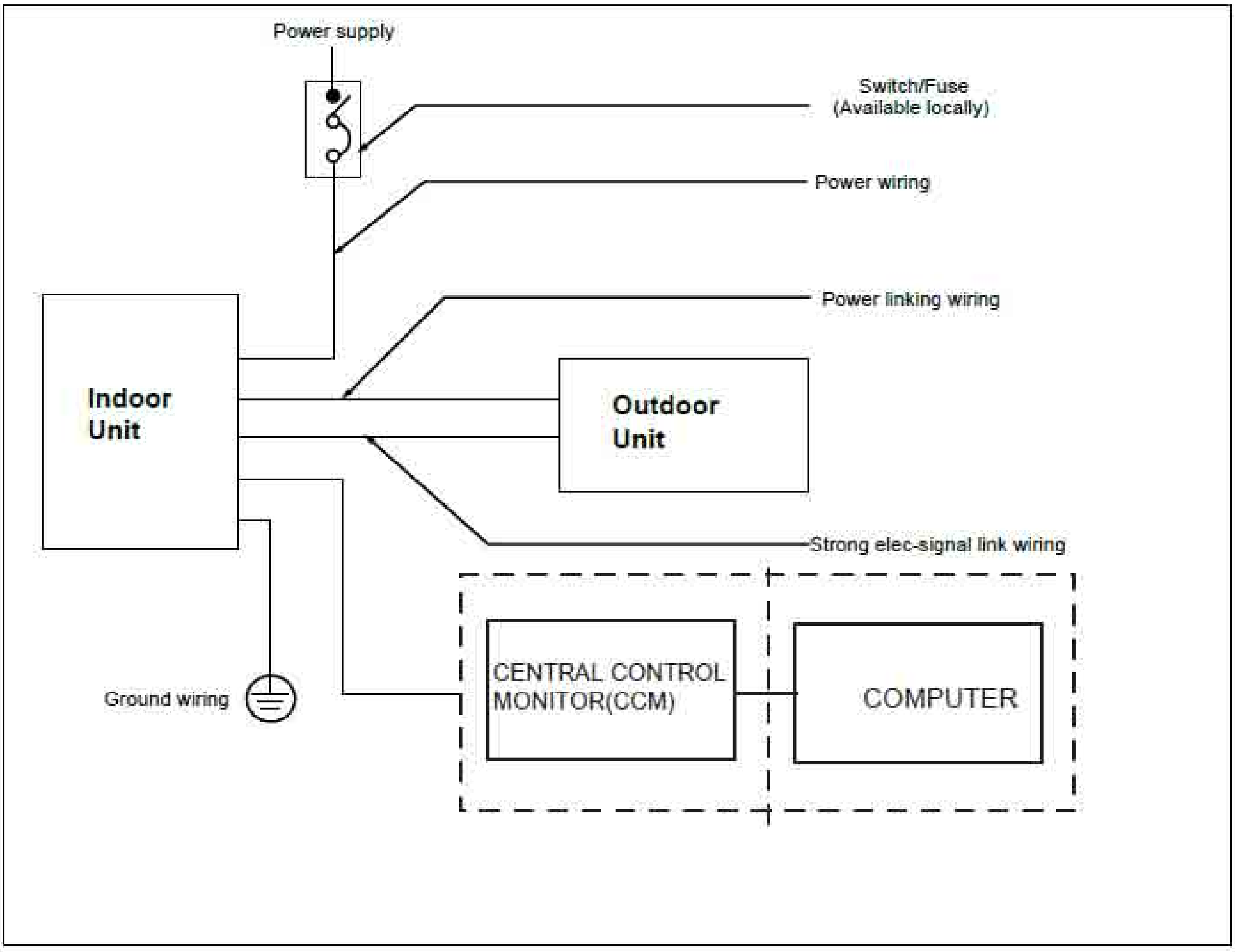
9. Accessories

	Name	Shape	Quantity
Tubing & Fittings	Soundproof / insulation sheath		2
	Binding tape		1
	Seal sponge		1
Drainpipe Fittings (for cooling & heating)	Drain joint		1
	Seal ring		1
Remote controller & Its Frame	Remote controller		1
	Frame		1
	Mounting screw(ST2.9 10-C-H)		2
	Alkaline dry batteries (AM4)		2
	Remote controller manual	——	1
Wired controller & Its Frame	Wired controller	——	1
Others	Owner' s manual	——	1
	Installation manual	——	1
EMS & It's fitting	Magnetic ring (twist the electric wires L and N around it to five circles)		1

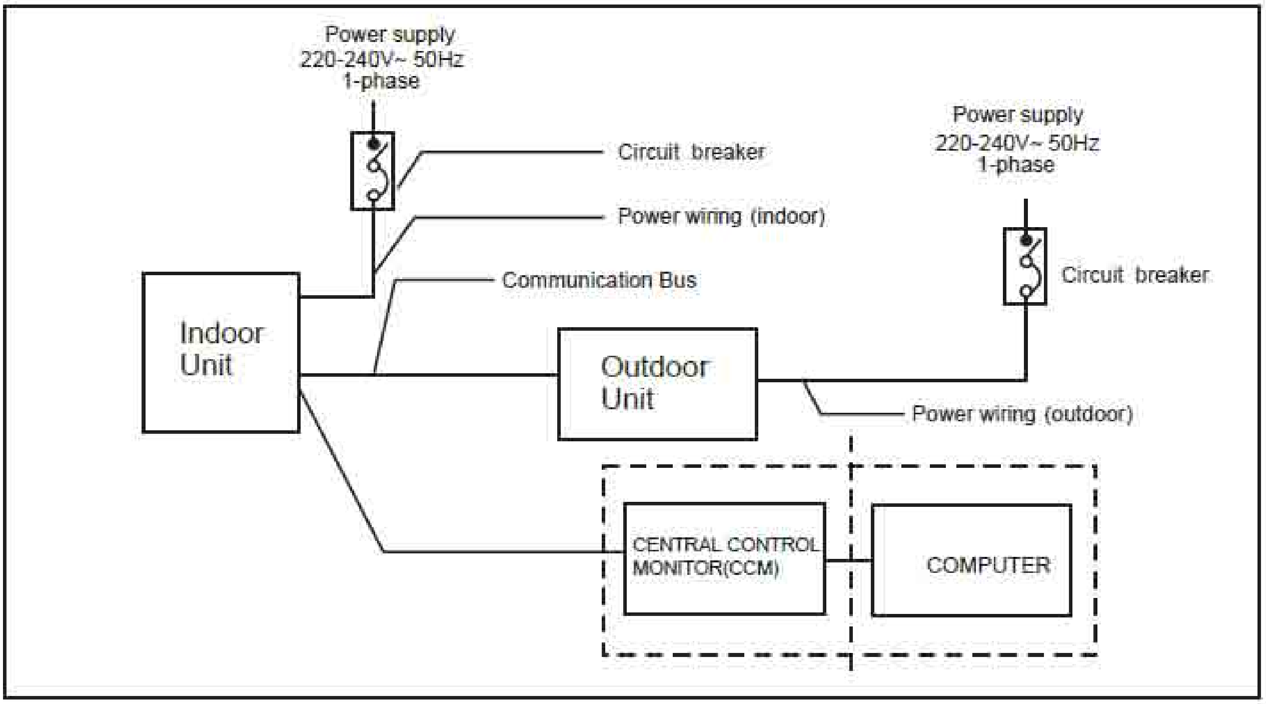
10. The Specification of Power

MODEL		12 (with 1 Phase Outdoor Unit)	18-24 (with 1 Phase Outdoor Unit)	30-36 (with 1 Phase Outdoor Unit)	36-60 (with 3 Phase Outdoor Unit)
INDOOR UNIT POWER	PHASE	1-PHASE	1-PHASE	1-PHASE	1-PHASE
	FREQUENCY AND VOLT	220-240V~, 50Hz	220-240V~, 50Hz	220-240V~, 50Hz	220-240V~, 50Hz
	POWER WIRING (mm²)	3x1.5	3x1.0	3x1.0	3x1.0
	CIRCUIT BREAKER(A)	15	15	15	15
OUTDOOR UNIT POWER	PHASE	1-PHASE	1-PHASE	1-PHASE	3-PHASE
	FREQUENCY AND VOLT	220-240V~ , 50HZ	220-240V~ , 50HZ	220-240V~ , 50HZ	380-415~ , 50HZ
	POWER WIRING (mm²)	———	3x2.5	3x4.0	5x2.5
	CIRCUIT BREAKER(A)	———	30	40	40
INDOOR/OUTDOOR CONNECTING WIRING (mm²)		4x1.5	3-core shielded wire 3x0.5	3-core shielded wire 3x0.5	3-core shielded wire 3x0.5

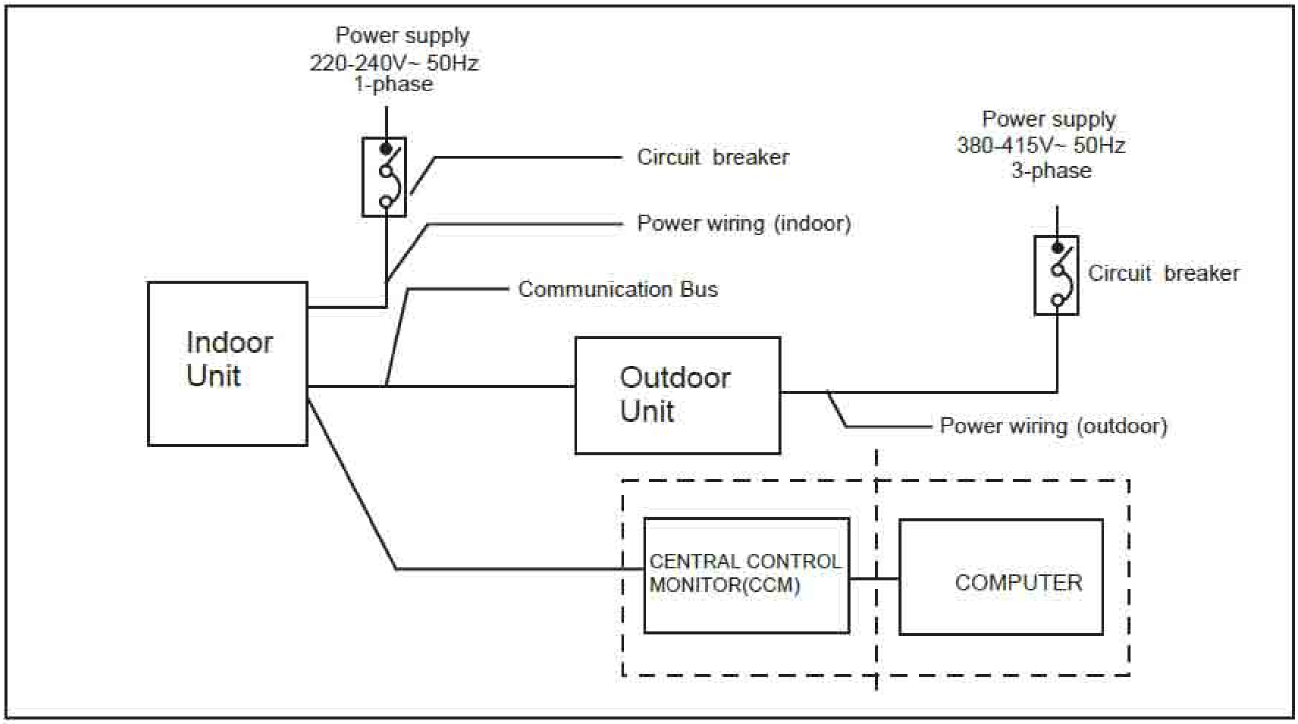
11. Field Wiring



For Model12 (with 1-Phase outdoor unit)

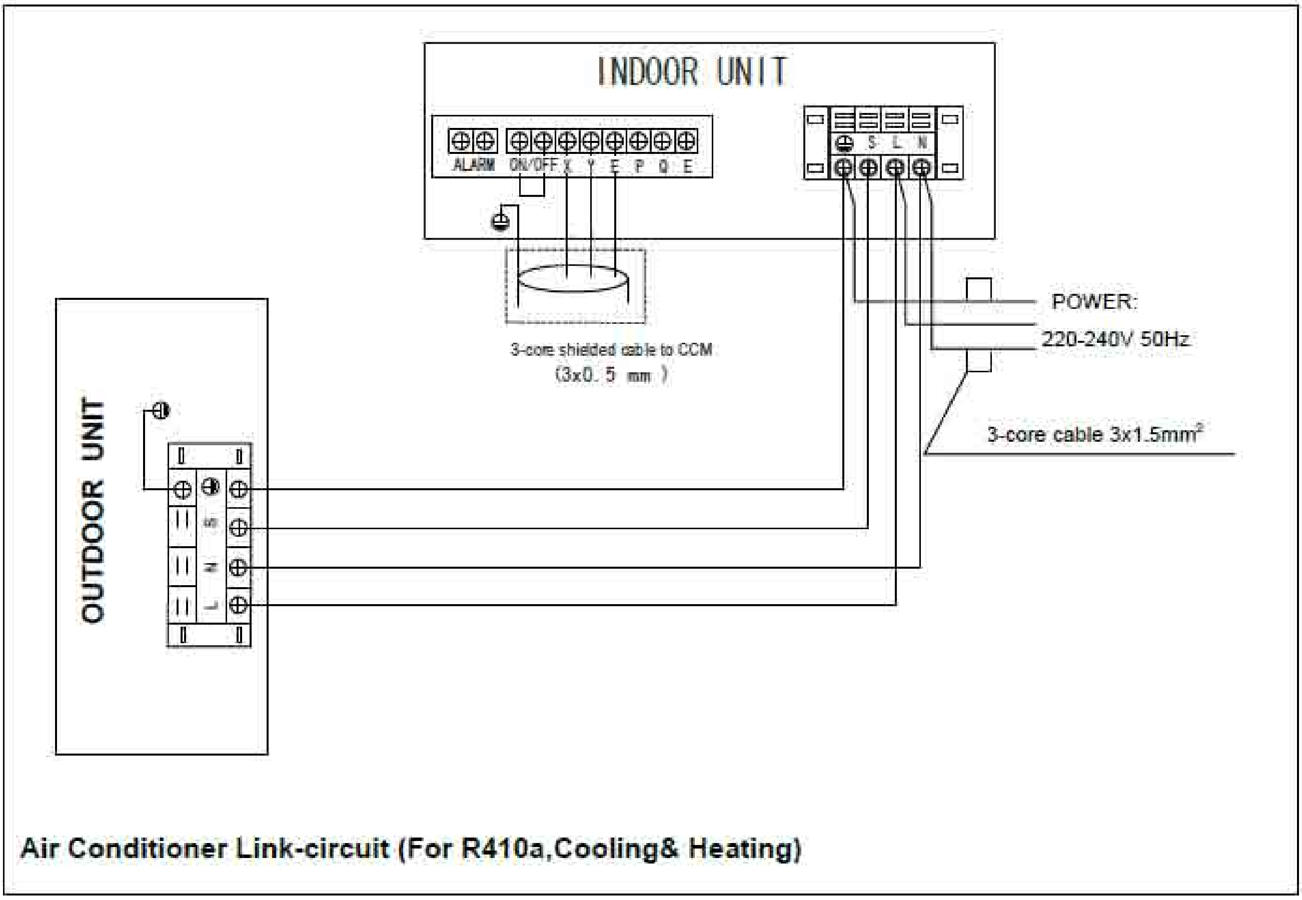


For Model 18-60(with 1-Phase outdoor unit)

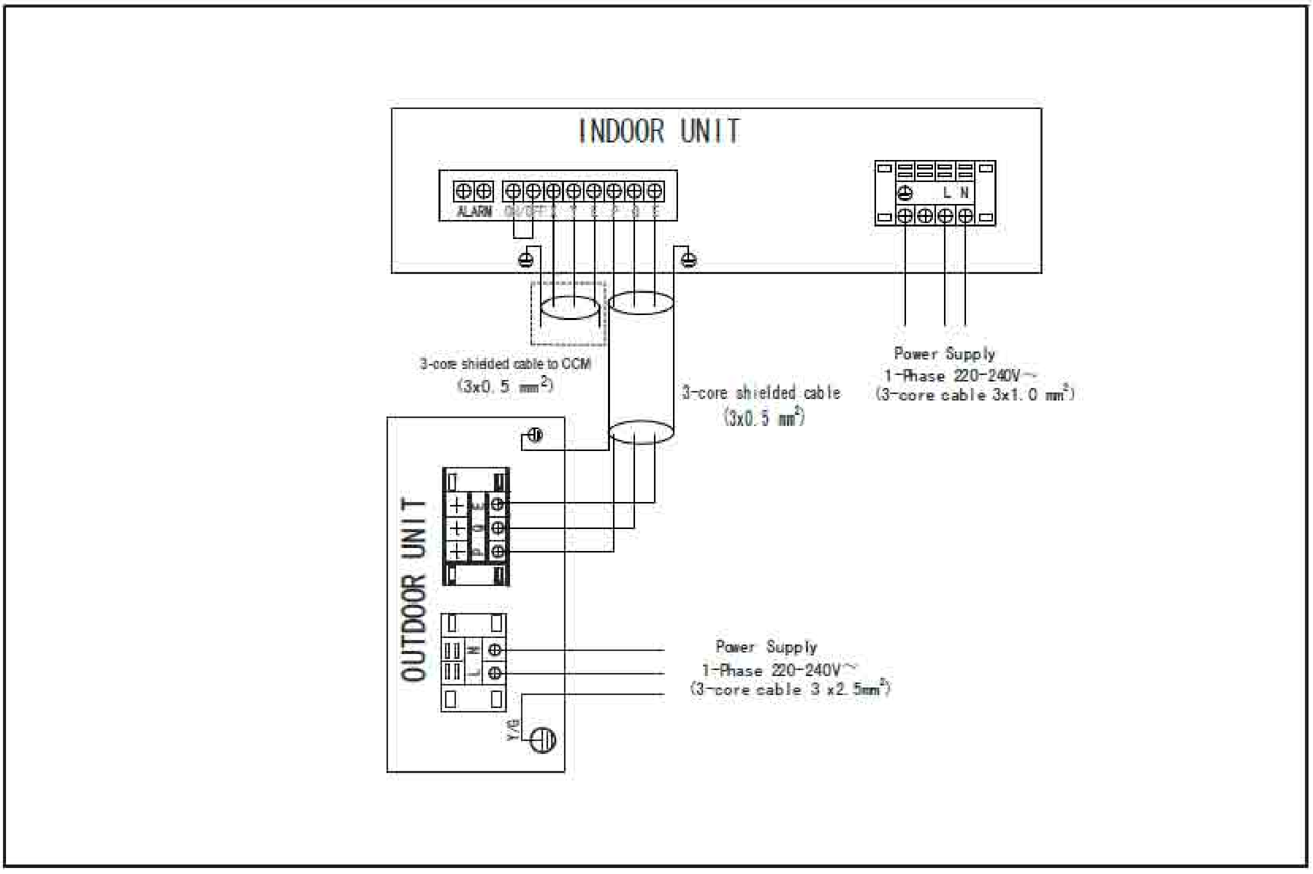


For Model36-60 (with 3-Phase outdoor unit)

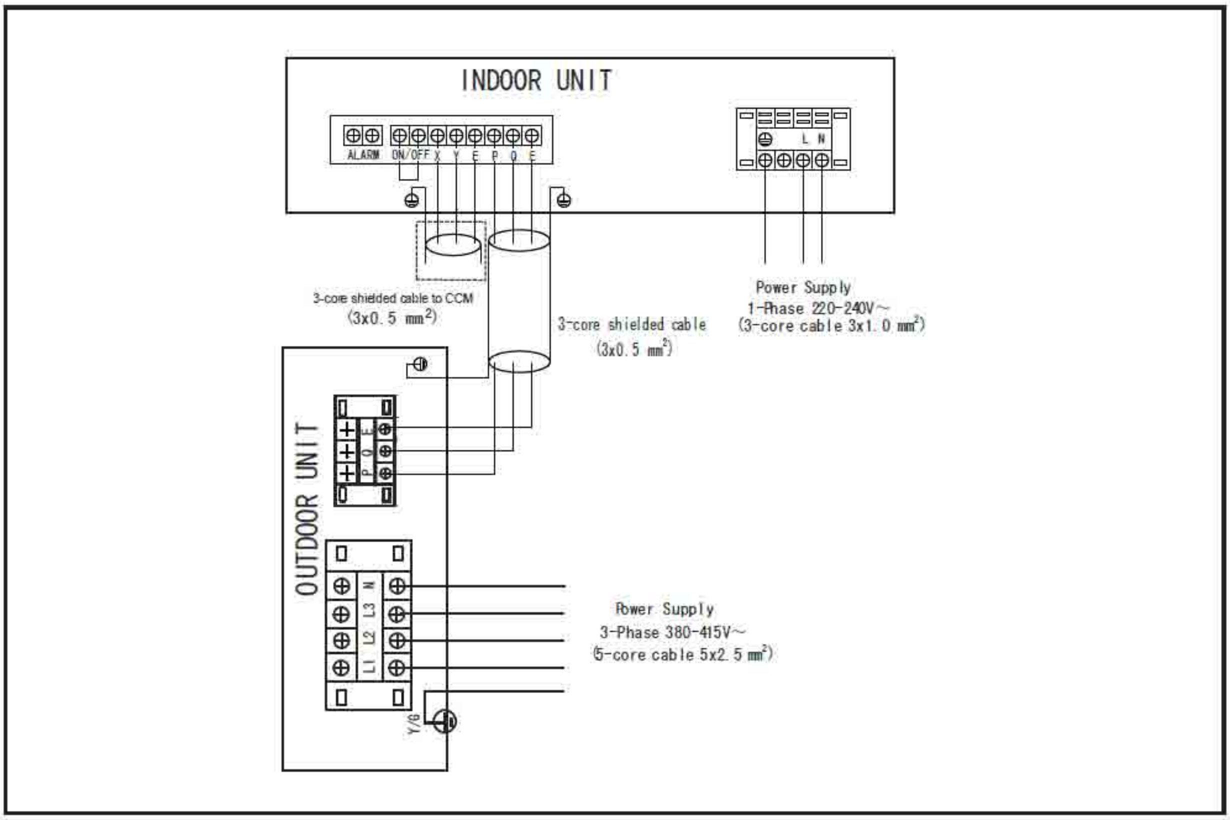
Air-conditioner link-circuit.



For Model12 (with 1-Phase outdoor unit)



For Model 18-24 (with 1-Phase outdoor unit)

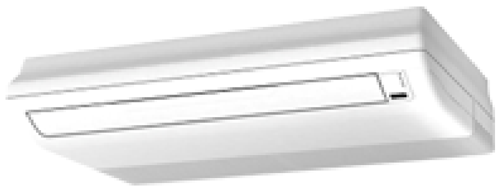


For Model36-60 (with 3-Phase outdoor unit)

Ceiling & Floor Type

1. Features

1.1. New design, more modern and elegant appearance.



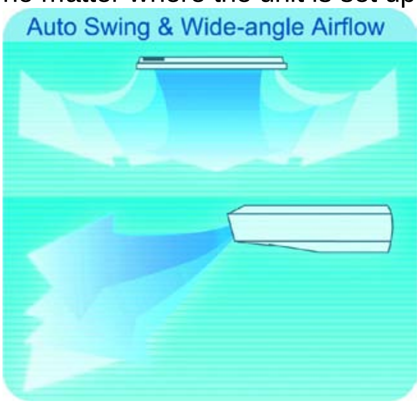


1.2. Convenient installation

--The ceiling type can be easily installed into a corner of the ceiling even if the ceiling is very narrow
--It is especially useful when installation of an air conditioner in the center of the ceiling is impossible due to a structure such as one lighting.

1.3. Two direction auto swing (vertical & horizontal) and wide angle air flow,

--Air flow directional control minimizes the air resistance and produces wilder air flow to vertical direction.
--The range of horizontal air discharge is widened which secures wider air flow distribution to provide more comfortable air circulation no matter where the unit is set up



1.4. Three level fan speed, more humanism design, meets different air-supply requirement.

1.5. Water proof by utilizing the absorbing plastic film on water collector

1.6. Easy operation. Auto-restart function, remote control and optional wire control method.

1.7. Low noise level plus compact size

--Shape of the blades has been improved to prevent noise caused by turbulence.

2. Specifications

			HSFI 351 XR	HSFI 531 XR	HSFI 711 XR
Indoor Unit	Model		**HSFI 351 XR**	**HSFI 531 XR**	**HSFI 711 XR**
	Power supply	V-ph-Hz	220~240-1-50	220~240-1-50	220~240-1-50
Outdoor Unit	Model		HCKI 351 XR	HCKI 532 XR	**HCKI 712 XR**
	Power supply	V-ph-Hz	220~240-1-50	220~240-1-50	220~240-1-50
Cooling	Capacity	kw	3.5	5.30	7.10
	Input	w	1050	1620	2180
	current	A	5.9-4.67-1.68	12.3-7.09-2.47	13.2-9.9-4.26
	EER		3.33	3.27	3.26
Heating	Capacity	kw	4.00	5.90	7.80
	Input	w	1065	1590	2090
	current	A	6.41-5.05-1.89	11.07-6.91-3.13	12.23-9.22-4.56
	COP		3.76	3.71	3.73
Indoor fan motor	Model		YSK25-6L	YSK55-4L	YSK55-4L
	Qty		1	1	1
	Input	W	33.4/31.1/29.5	125/105/85	125/105/85
	Capacitor	μF	1.5uF/450V	2.5uF/450V	2.5uF/450V
	Speed(Hi/Mi/Lo)	r/min	756/666/592	1310/1190/1040	1310/1190/1040
Indoor coil	Number of rows		3	3	3
	Tube pitch(a)×row pitch(b)	mm	25.4×22	25.4 x 22	25.4 x 22
	Fin spacing	mm	1.7	1.7	1.7
	Fin type (code)		Hydrophilic aluminium	Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia. and type	mm	Φ9.53 Inner grooved copper tube	Φ9.53 Inner grooved copper tube	Φ9.53 Inner grooved copper tube
	Coil length × height × width	mm	804x254x66	804x254x66	804x254x66
	Number of circuits		3	3	3
Indoor air flow(Hi/Med/Lo)		m^3/h	584/518/463	800/600/500	1000/900/700
Indoor noise level (Hi/Med/Lo)		dB(A)	40/37/33	43/41/38	45/43/40
Indoor unit	Dimension (W×H×D)	mm	990x203x660	990 x203 x660	990 x203 x660
	Packing (W×H×D)	mm	1089x296 x744	1089 x296 x744	1089 x296 x744
	Net/Gross weight	kg	27/33	29/35	29/35
Refrigerant type			R410A	R410A	R410A
Design pressure		MPa	4.2/1.5	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	φ6.4/φ12.7	φ6.4/φ12.7	φ9.5/φ15.9
Drainage water pipe diameter		mm	ODφ25	ODφ25	ODφ25
Controller			R05/BGE (standard)	R05/BGE (standard)	R05/BGE (standard)
Operation temperature		℃	17-30	17-30	17-30

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 7.5m(horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 7.5m(horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Indoor Unit	Model		**HSFI 1081 XR**
	Power supply	V-ph-Hz	220~240-1-50
Outdoor Unit	Model		**HCSI 1083 XR**
	Power supply	V-ph-Hz	380-415-3-50
Cooling	Capacity	kw	10.80
	Input	w	3320
	current	A	7.53-4.72-3.30
	EER		3.25
Heating	Capacity	kw	11.85
	Input	w	3160
	current	A	5.98-4.47-1.49
	COP		3.75
Indoor fan motor	Model		YSK80-4A
	Qty		1
	Input	W	143/122/110
	Capacitor	μF	3.5uF/450V
	Speed(Hi/Mi/Lo)	r/min	1310/1210/1115
Indoor coil	Number of rows		3
	Tube pitch(a)×row pitch(b)	mm	25.4 x 22
	Fin spacing	mm	1.7
	Fin type (code)		Hydrophilic aluminum
	Tube outside dia. and type	mm	Φ9.53 Inner grooved copper tube
	Coil length × height × width	mm	1094 x 254 x 66
	Number of circuits		5
Indoor air flow(Hi/Med/Lo)		m^3/h	1400/1200/1000
Indoor noise level (Hi/Med/Lo)		dB(A)	45/43/40
Indoor unit	Dimension (W×H×D)	mm	1280 x 203 x 660
	Packing (W×H×D)	mm	1379 x 296 x 744
	Net/Gross weight	kg	37/42
Refrigerant type			R410A
Design pressure		MPa	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	Φ9.5/Φ15.9
Drainage water pipe diameter		mm	ODφ25
Controller			R05/BGE (standard)
Operation temperature		℃	17-30

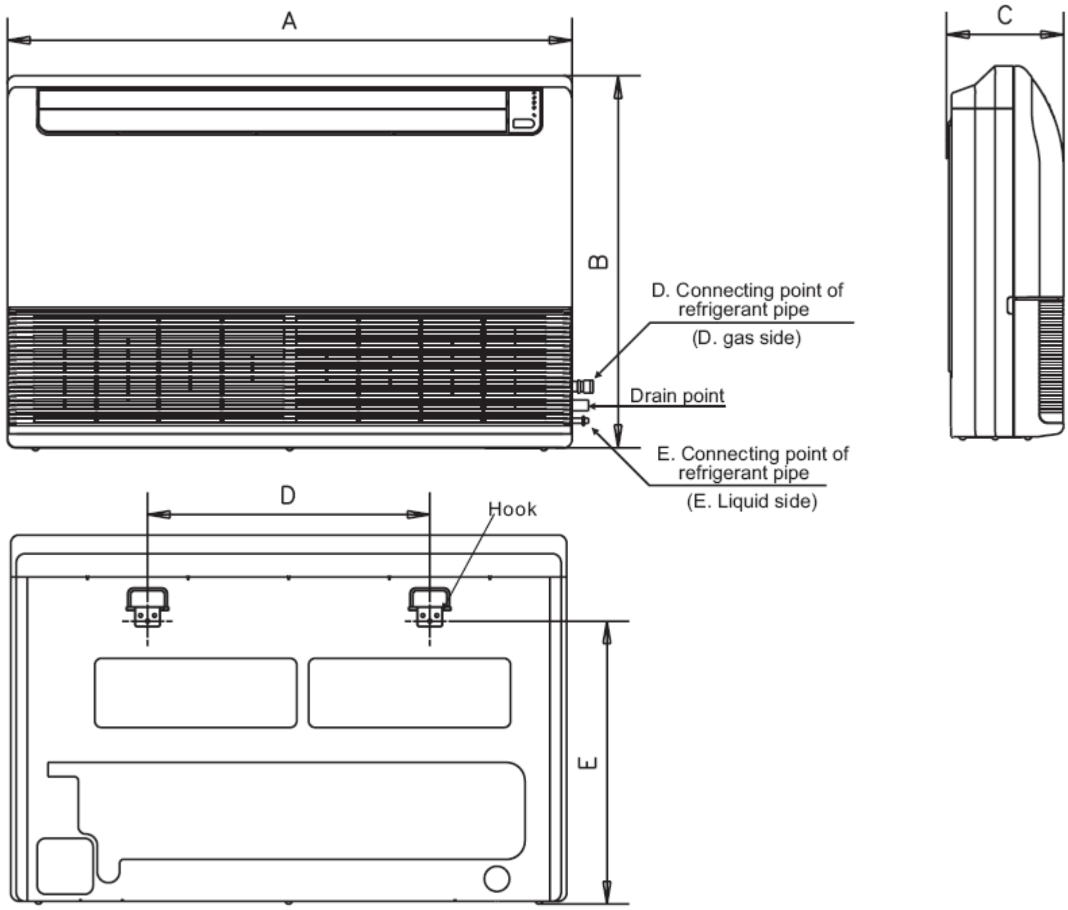
Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 7.5m(horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 7.5m(horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Indoor Unit	Model		**HSFI 1411 XR**	**HSFI 1761 XR**
	Power supply	V-ph-Hz	220~240-1-50	220~240-1-50
Outdoor Unit	Model		**HCSI 1413 XR**	**HCSI 1762 XR**
	Power supply	V-ph-Hz	380-415-3-50	380-415-3-50
Cooling	Capacity	kw	14.10	17.60
	Input	w	4340	5360
	current	A	8.5-6.27-3.60	11.5-7.20-4.3
	EER		3.25	3.28
Heating	Capacity	kw	15.40	18.50
	Input	w	4140	4960
	current	A	8.48-6.19-2.08	9.63-7.06-2.37
	COP		3.72	3.73
Indoor fan motor	Model		YSK59-4D-4	YSK59-4D-4
	Qty		2	2
	Input	W	102/98/96	102/98/96
	Capacitor	μF	2.5uF/450V	2.5uF/450V
	Speed(Hi/Mi/Lo)	r/min	1230/1130/1070	1230/1130/1070
Indoor coil	Number of rows		3	3
	Tube pitch(a)×row pitch(b)	mm	25.4 x 22	25.4 x 22
	Fin spacing	mm	1.7	1.7
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia. and type	mm	Φ9.53 Inner grooved copper tube	Φ9.53 Inner grooved copper tube
	Coil length × height × width	mm	1360 x 254 x 66	1360 x 254 x 66
	Number of circuits		5	5
Indoor air flow(Hi/Med/Lo)		m^3/h	2000/1800/1600	2000/1800/1600
Indoor noise level (Hi/Med/Lo)		dB(A)	47/46/44	47/46/44
Indoor unit	Dimension (W×H×D)	mm	1670 x 240 x 680	1670 x 240 x 680
	Packing (W×H×D)	mm	1764 x 329 x 760	1764 x 329 x 760
	Net/Gross weight	kg	52/59	52/59
Refrigerant type			R410A	R410A
Design pressure		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	Φ9.5/Φ15.9	Φ9.5/Φ15.9
Drainage water pipe diameter		mm	ODφ25	ODφ25
Controller			R05/BGE (standard)	R05/BGE (standard)
Operation temperature		℃	17-30	17-30

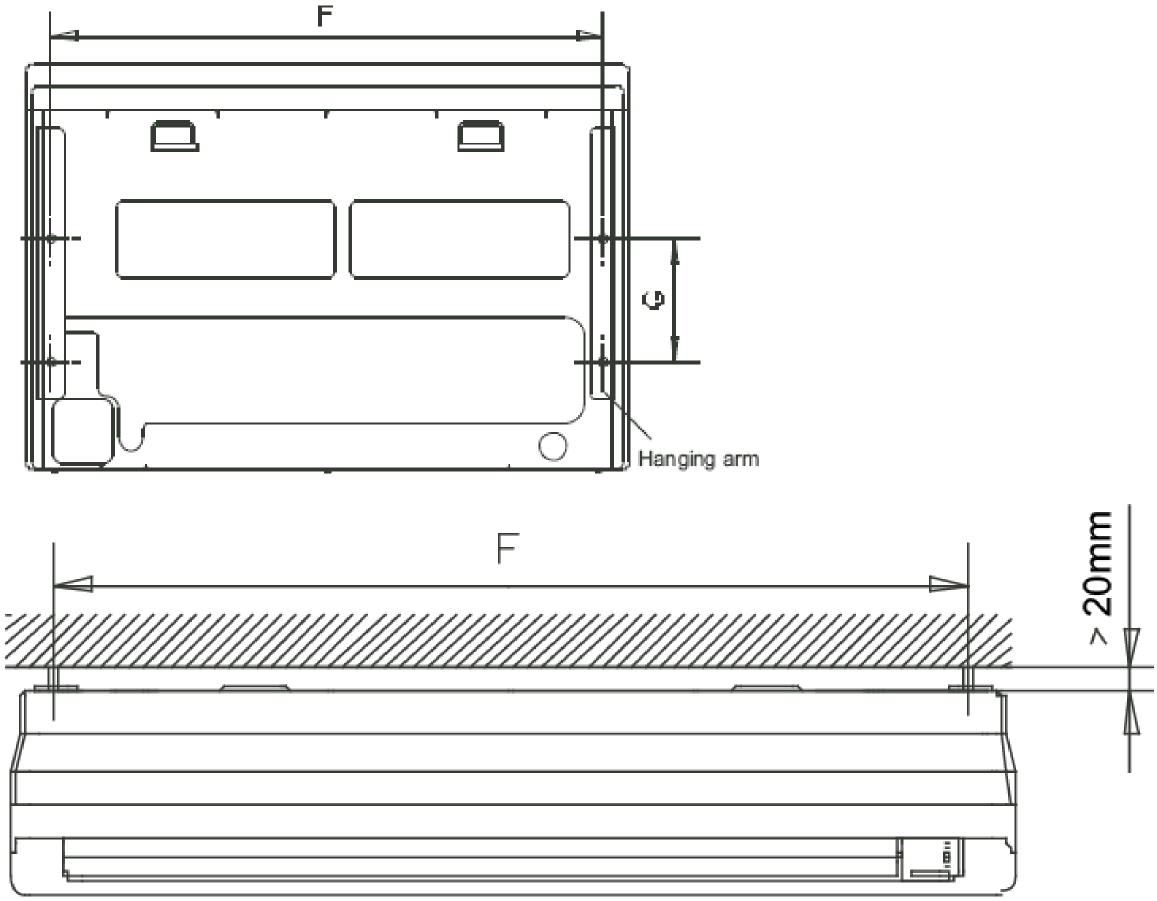
Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 7.5m(horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 7.5m(horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

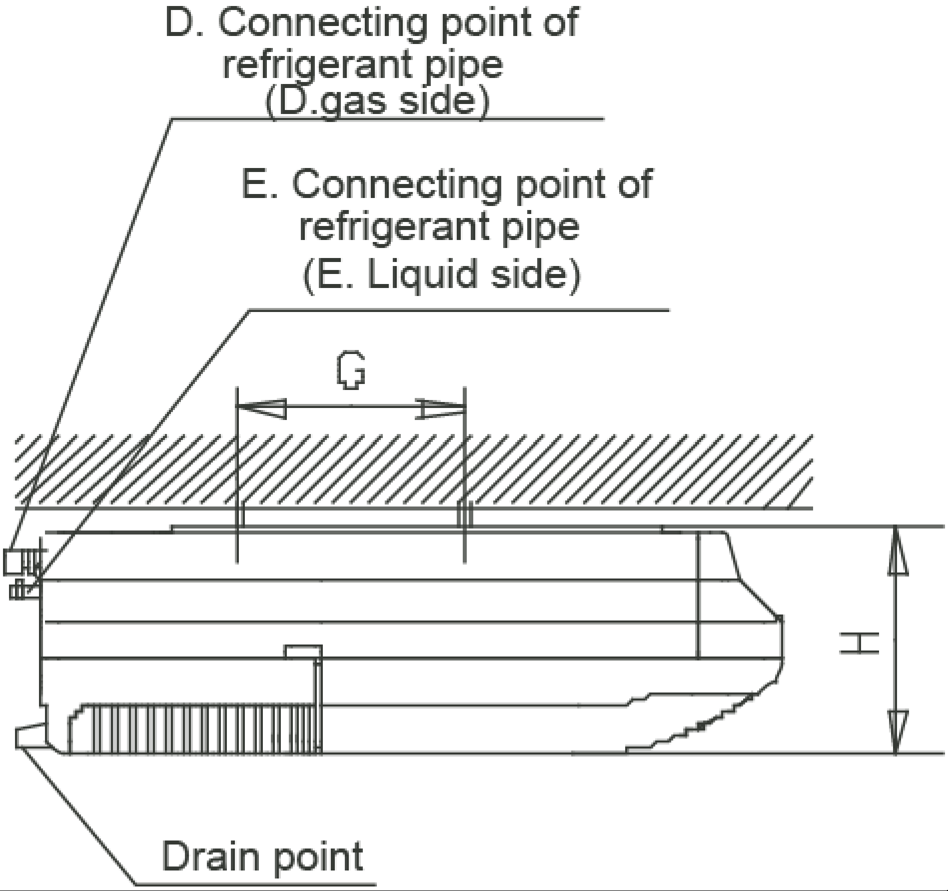
3. Dimensions

a. Wall mounting installation



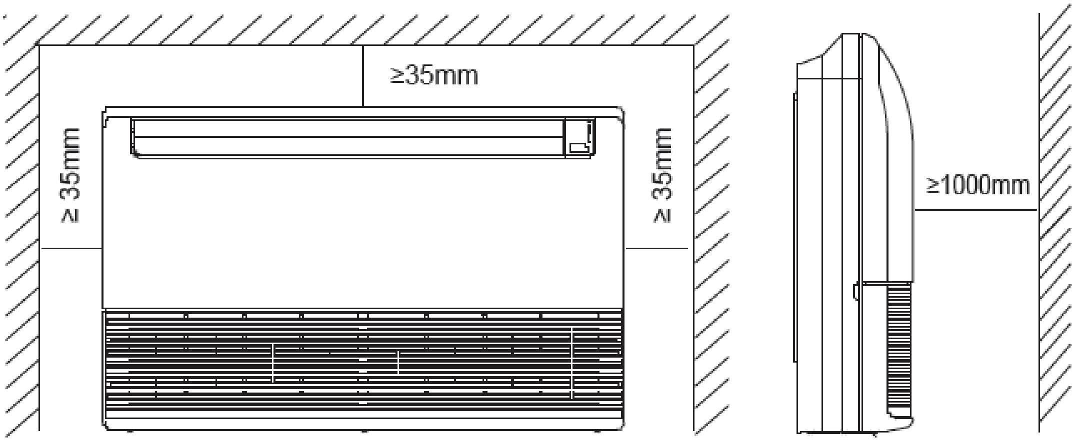
b. Ceiling installation





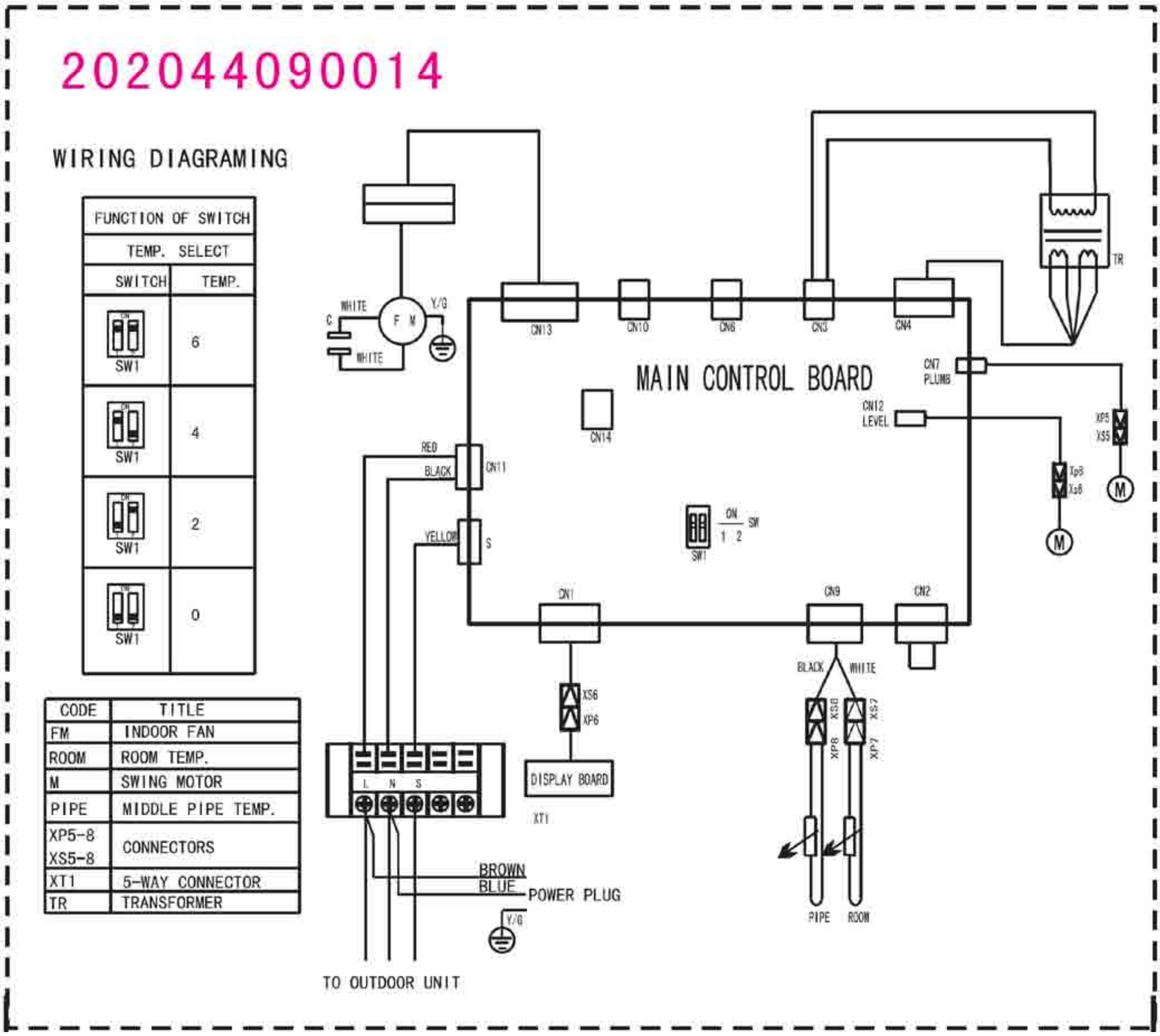
Capacity(Btu/h)	A	B	C	D	E	F	G	H
12000-24000Btu/h	990	660	206	505	506	907	200	203
30000-36000Btu/h	1280	660	206	795	506	1195	200	203
48000-60000Btu/h	1670	680	244	1070	450	1542	200	240

4. Service Space

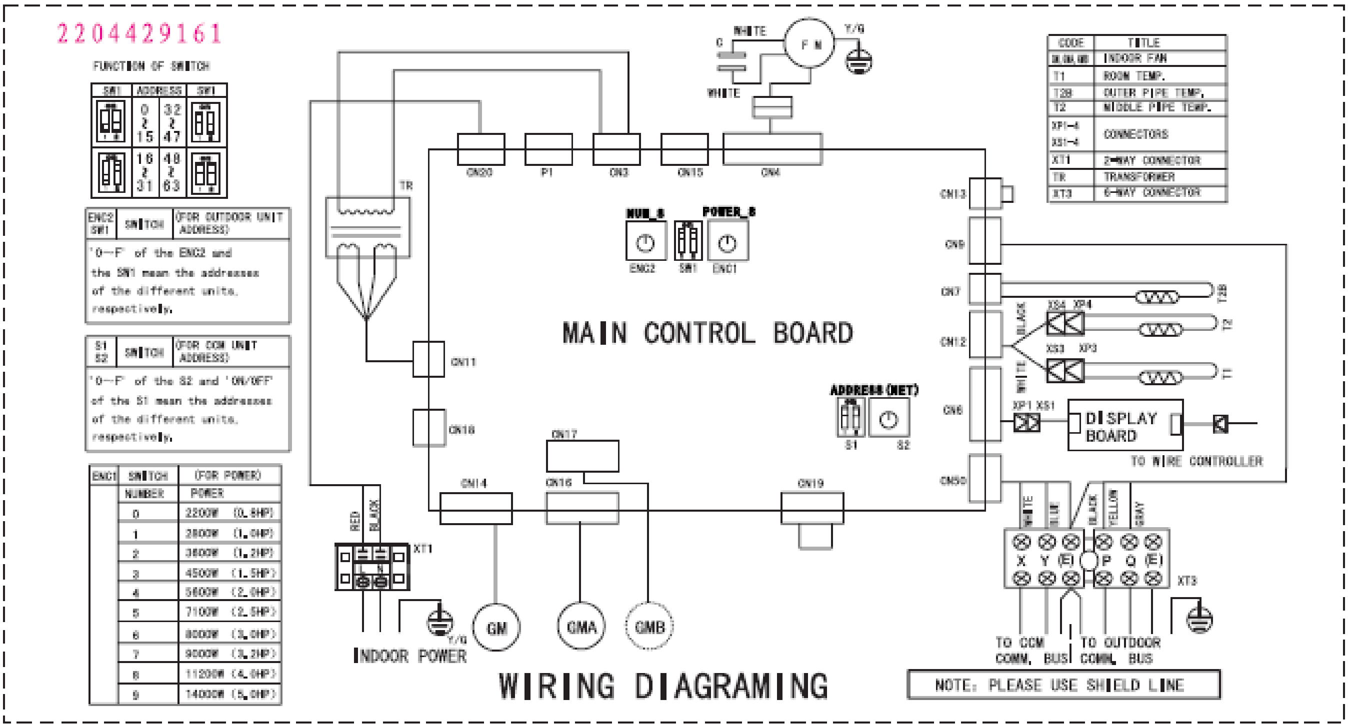


5. Wiring Diagrams

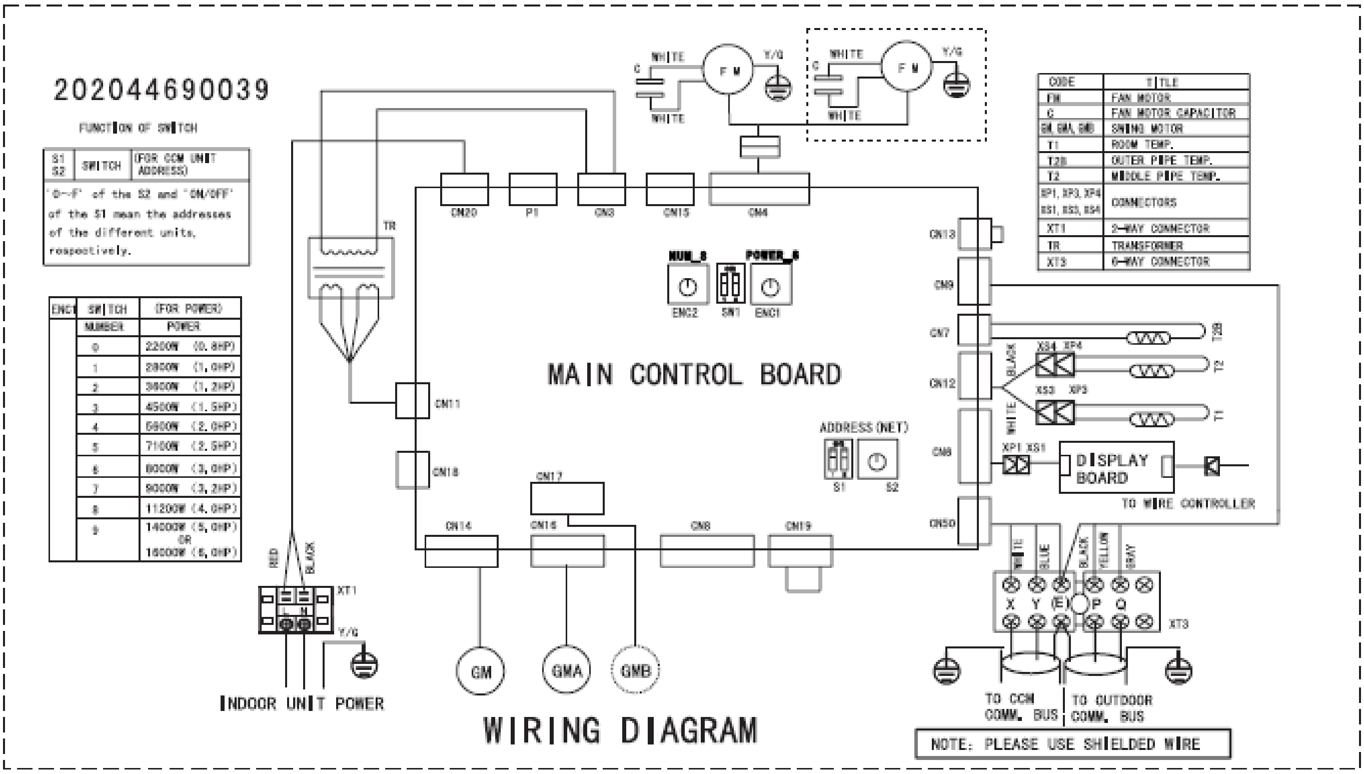
HSFI 351 XR



HSFI 531 XR、HSFI 711 XR



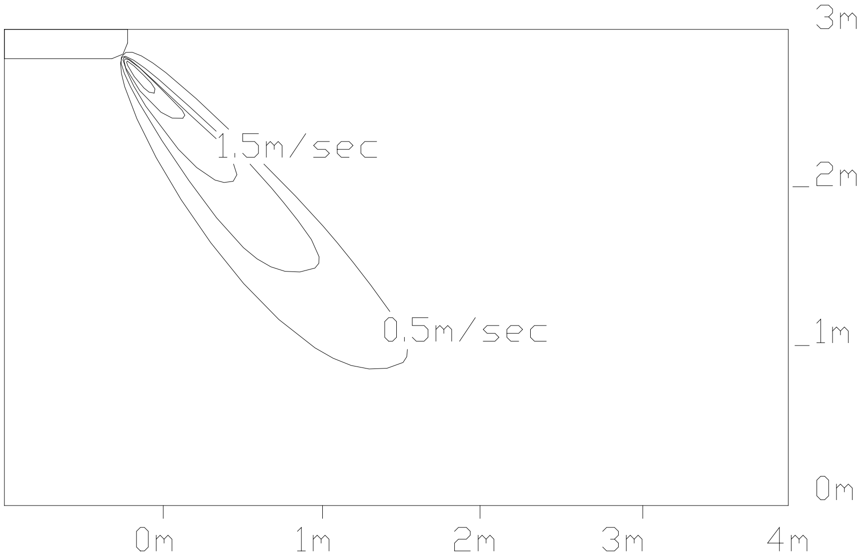
HSFI 1081 XR、HSFI 1411 XR、HSFI 1761 XR

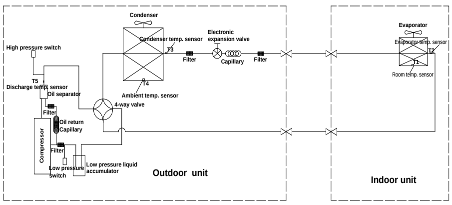


6. Air Velocity and Temperature Distributions

Discharge angle 60° (CEILING)

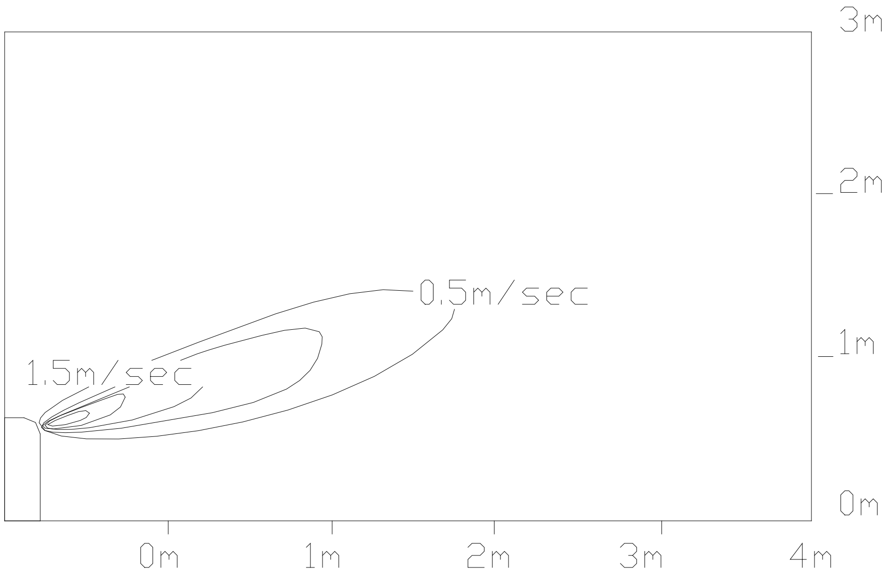
Airflow velocity



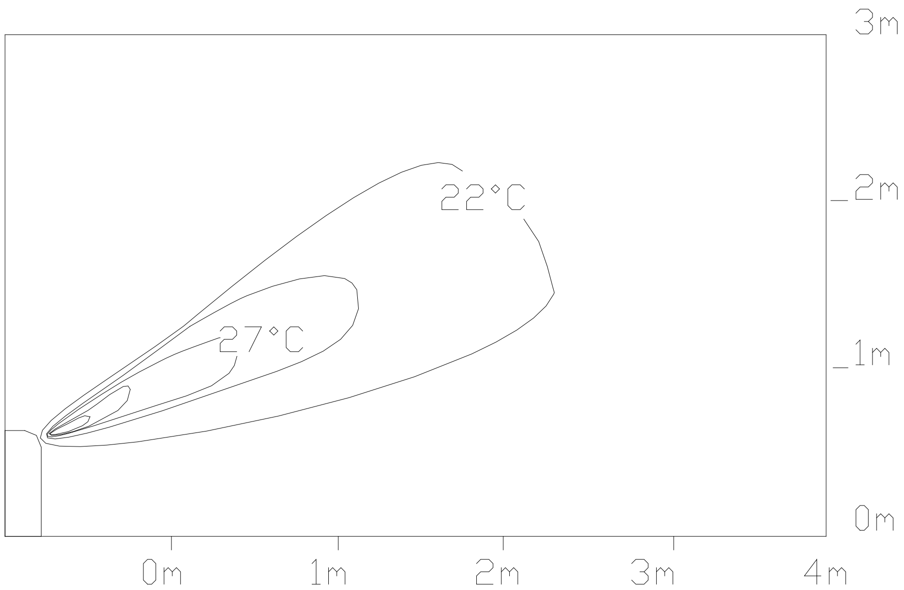


Discharge angle 60° (FLOOR)

Airflow velocity



Temperature

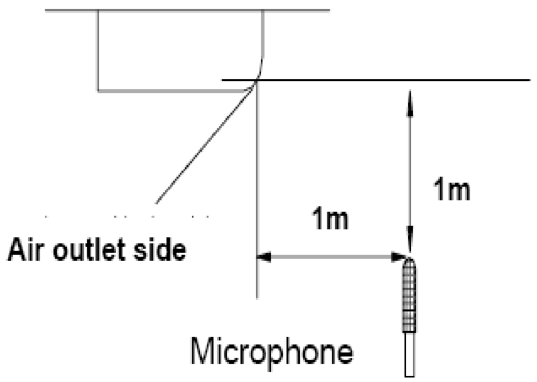


7. Electric Characteristics

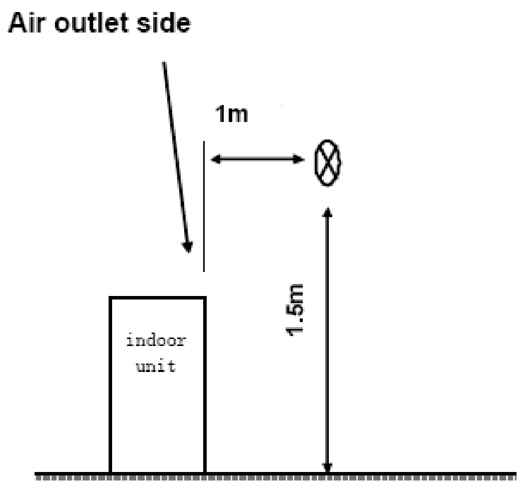
Model	Indoor Unit				Power Supply
	Hz	Voltage	Min	Max	MFA
HSFI 351 XR	50	220~240	198	254	20
HSFI 531 XR	50	220~240	198	254	15
HSFI 711 XR	50	220~240	198	254	15
HSFI 1081 XR	50	220~240	198	254	15
HSFI 1411 XR	50	220~240	198	254	15
HSFI 1761 XR	50	220~240	198	254	15

Remark:
MFA: Max. Fuse Amps. (A)

8. Sound Levels



Ceiling

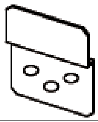
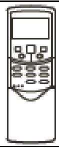


Floor

Model	Noise level dB(A)		
	H	M	L
HSFI 351 XR	40	37	33
HSFI 531 XR	43	41	38
HSFI 711 XR	45	43	40
HSFI 1081 XR	45	43	40
HSFI 1411 XR	47	46	44
HSFI 1761 XR	47	46	44

9. Accessories

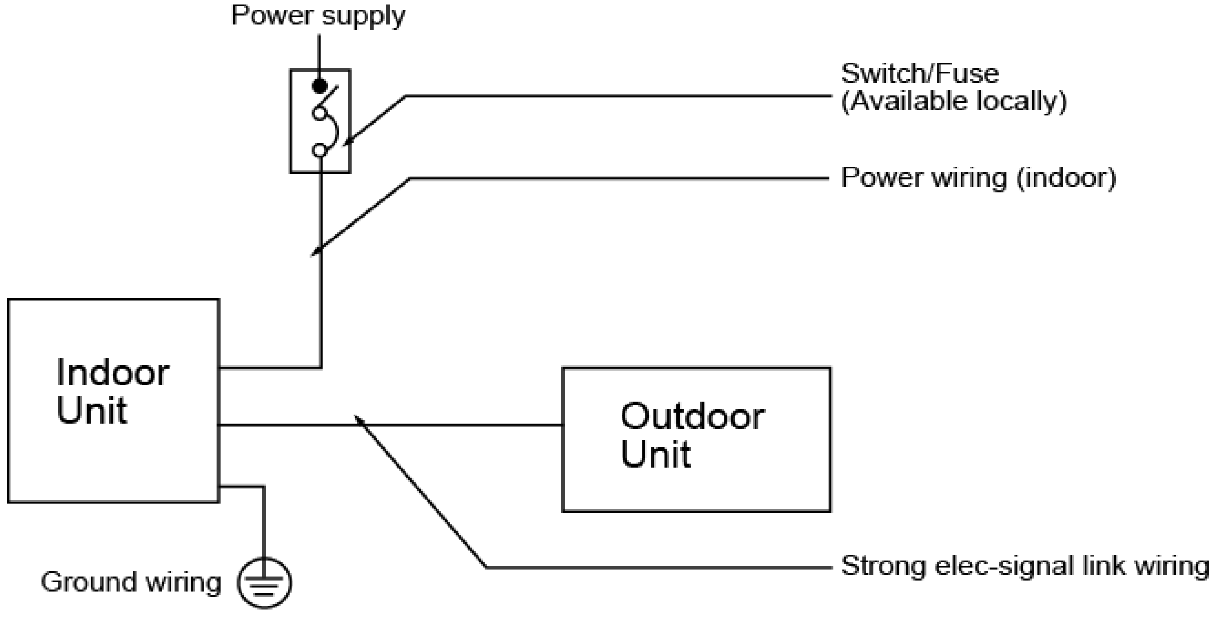
9.1 For 12kBtu/h

	Name	Shape	Quantity
Installation fittings	1.Hook		2
	2.Hanging arm		2
Remote controller & Its holder	3. Remote controller		1
	4. Remote controller holder		1
	5. Mounting screw (ST2.9×10-C-H)		2
	6. Alkaline dry batteries (AM4)		2
Others	7. Owner's manual	——	1
	8. Installation manual	——	1
	9. Remote controller manual	——	1

10. The Specification of Power

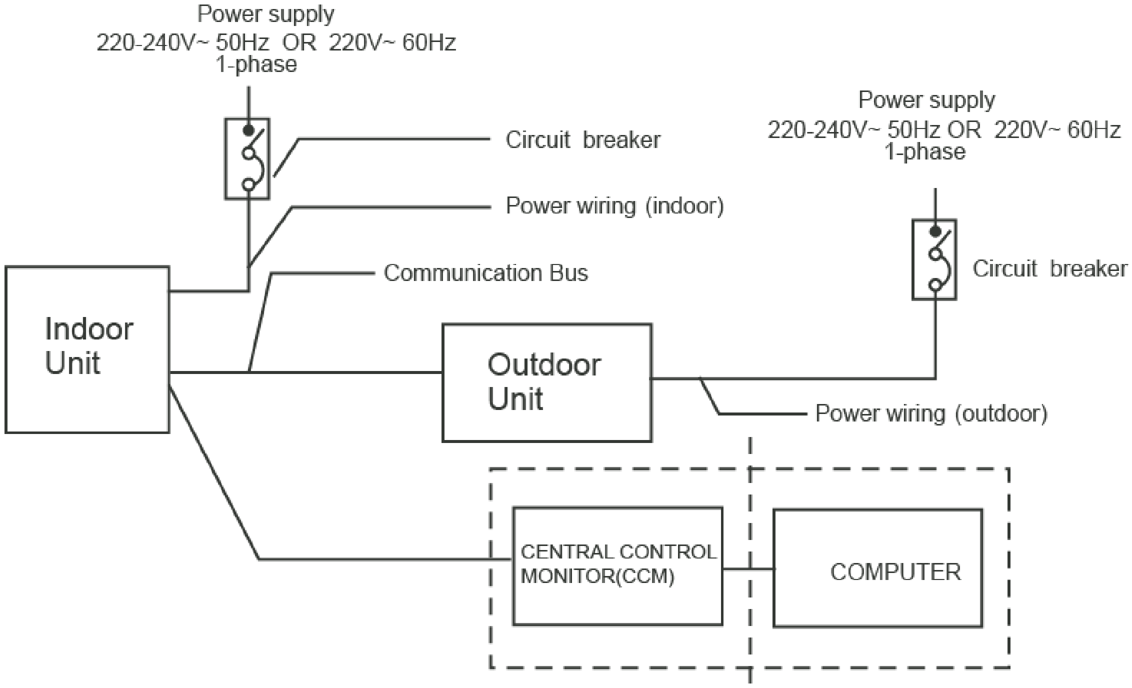
CAPICITY(Btu/h)		12000 (with 1-PHASE OUTDOOR UNIT)	18000-24000 (with 1-PHASE OUTDOOR UNIT)	30000-48000 (with 1-PHASE OUTDOOR UNIT)	36000-48000 (wirh 3-PHASE OUTDOOR UNIT)	24000-36000 (with 1-PHASE OUTDOOR UNIT)
INDOOR UNIT	PHASE	1-PHASE	1-PHASE	1-PHASE	1-PHASE	1-PHASE
	FREQUENCY AND VOLT	220-240V~ 50Hz	220-240V~ 50Hz	220-240V~ 50Hz	220-240V~ 50Hz	220V~ 60Hz
	POWER WIRING (mm^2)	3X1.5	3X1.0	3X1.0	3X1.0	3X1.0
	CIRCUIT BREAKER (A)	20	15	15	15	15
OUTDOOR NUIT	PHASE	—	1-PHASE	1-PHASE	3-PHASE	1-PHASE
	FREQUENCY AND VOLT	—	220-240V~ 50Hz	220-240V~ 50Hz	380-415V~ 50Hz	220V~ 60Hz
	POWER WIRING (mm^2)	—	3X2.5	3X2.5	5X2.5	3X2.5
	CIRCUIT BREAKER (A)	—	30	40	30	40
INDOOR/OUTDOOR CONNECTION WIRING (mm^2)		4-CORE WIRE 4X1.5	3-CORE SHIELDED WIRE 3X0.5	3-CORE SHIELDED WIRE 3X0.5	3-CORE SHIELDED WIRE 3X0.5	3-CORE SHIELDED WIRE 3X0.5

11. Field Wiring

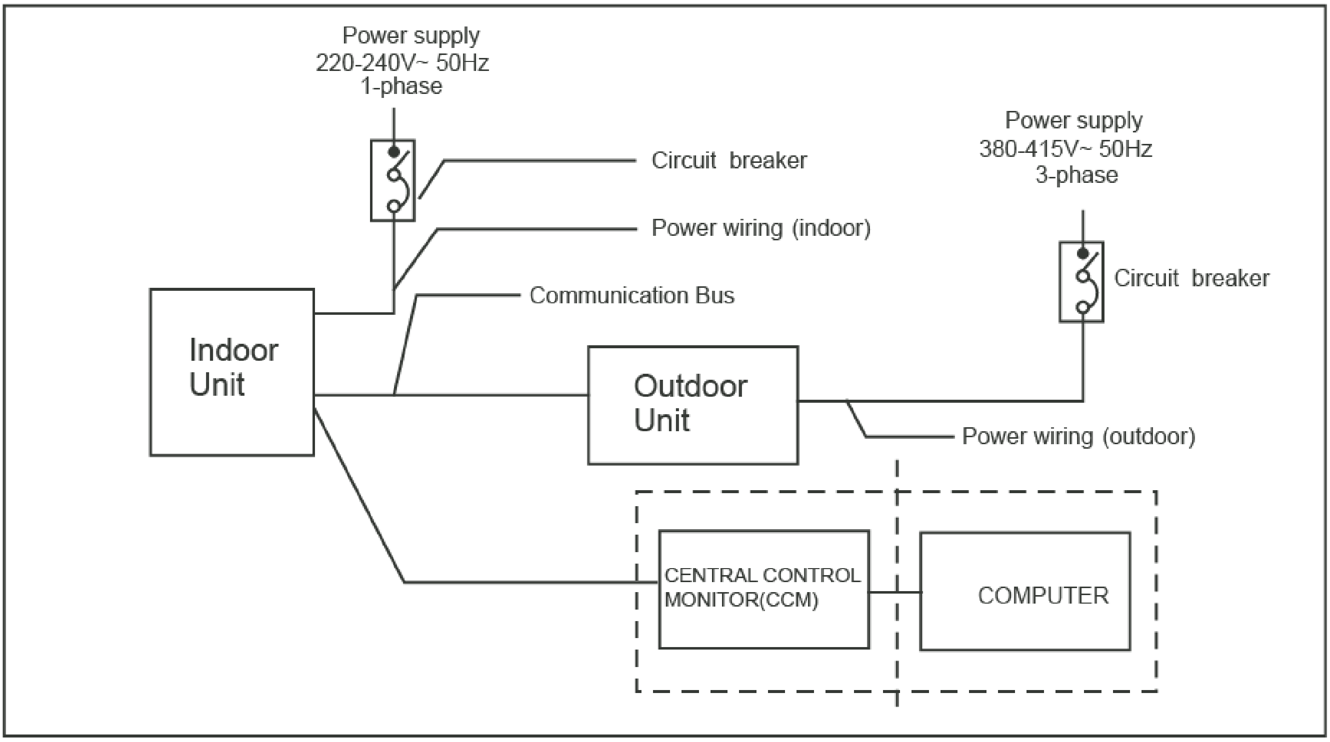


(For 12000Btu/h)

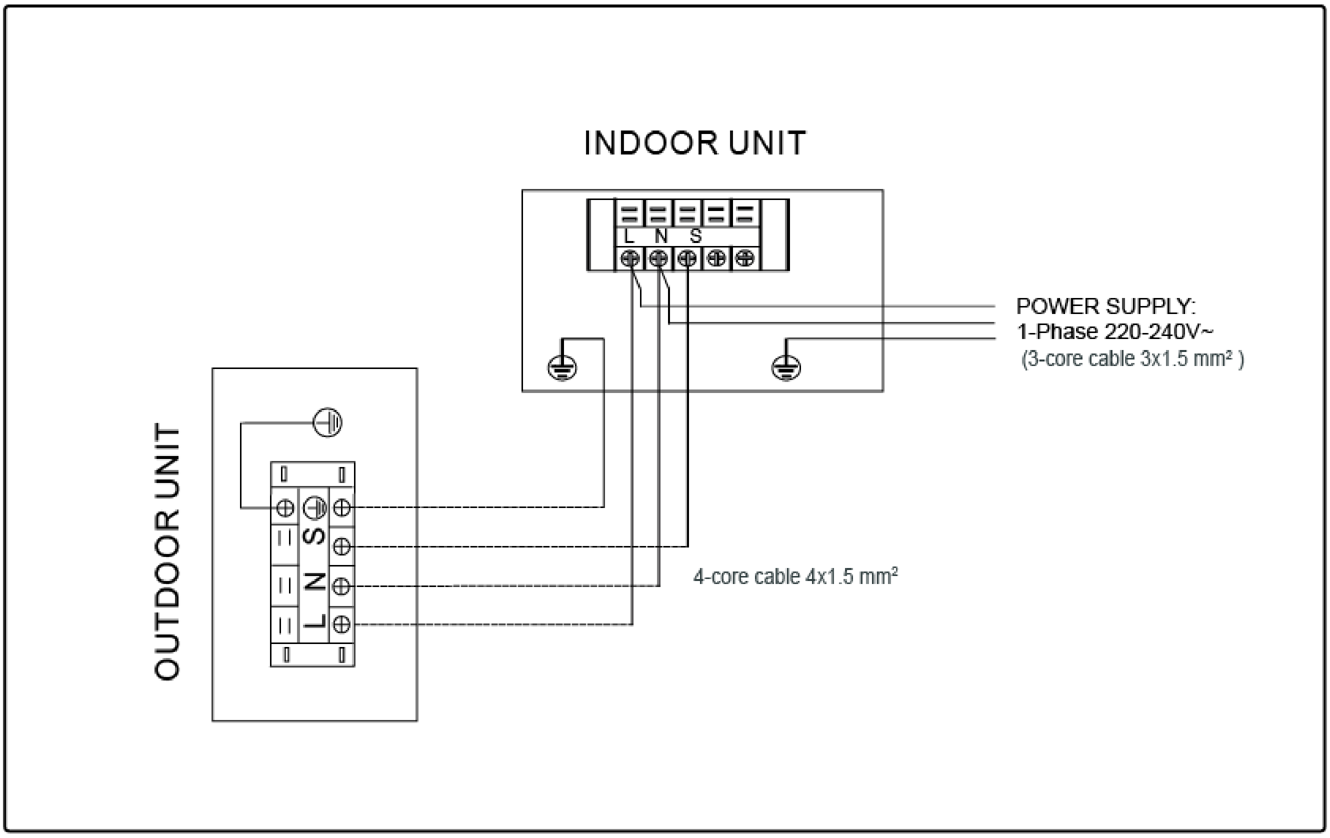
- Ground the air conditioner properly in case to affect its anti-interference function



For 18000-60000Btu/h (with 1-Phase outdoor unit)

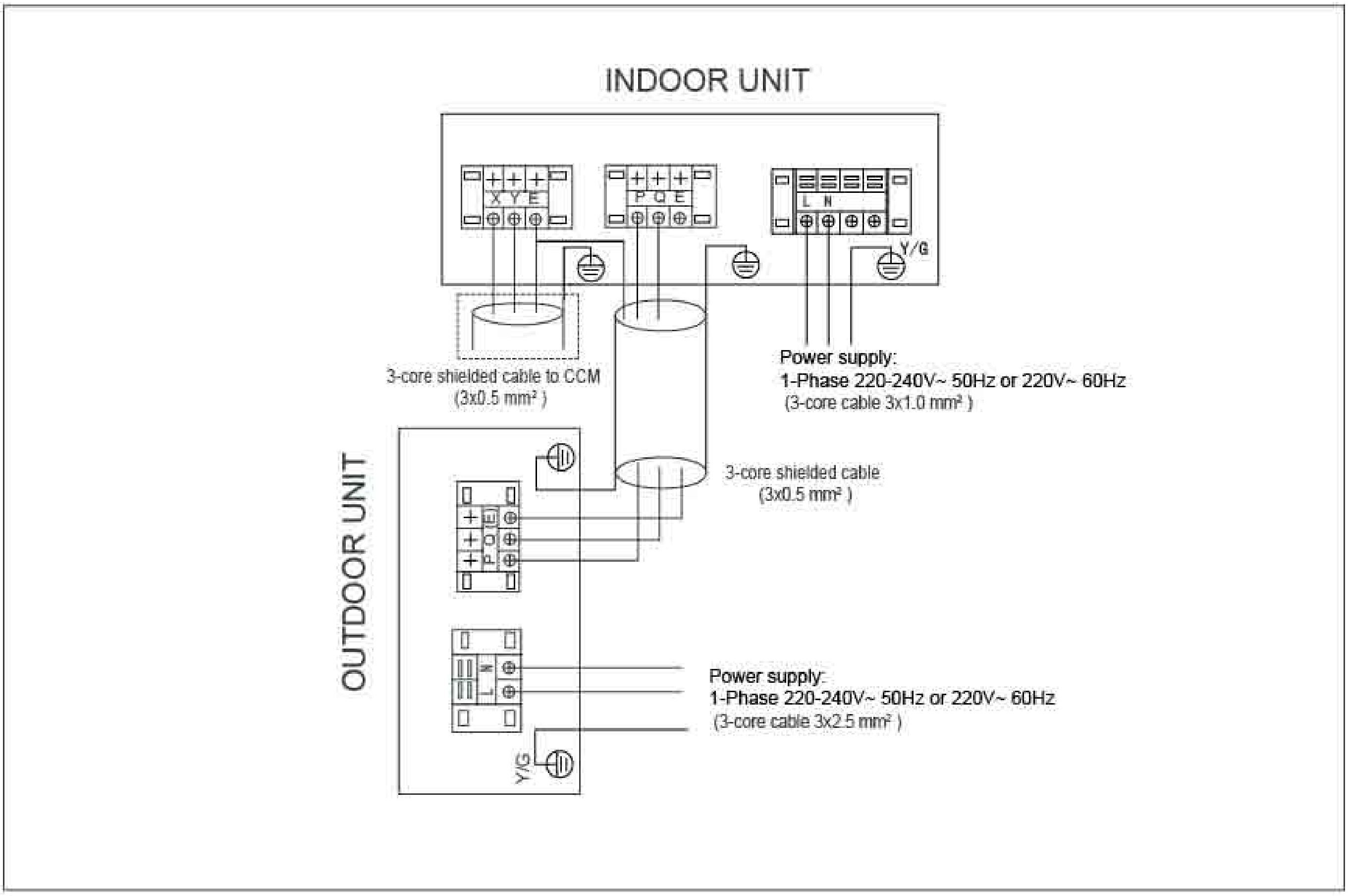


For 36000-60000Btu/h (with 3-Phase outdoor unit)

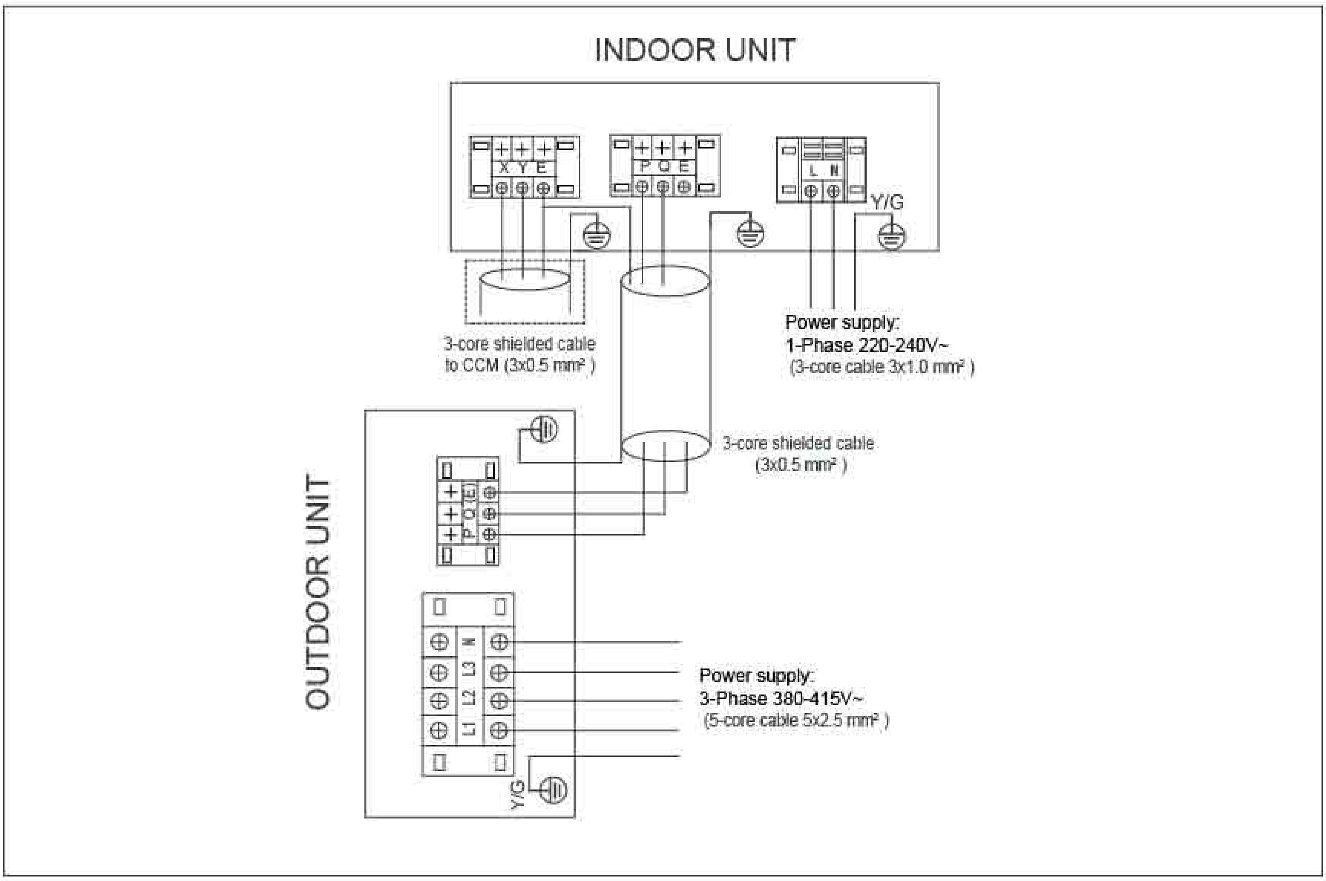


12000Btu/h(with 1-PHASE OUTDOOR UNIT)(1 PHASE,50Hz)

Air Conditioner Link-circuit (For R410A,Cooling& Heating)



For 18000-60000Btu/h (with 1-Phase outdoor unit)



For 36000-60000Btu/h (with 3-Phase outdoor unit)

Console Type

1. Features

1.1. Consumes up to 30% less energy than non-inverter units

——DC inverter compressor
——indoor fan motor adopts DC motor

1.2. Achieves set temperature more quickly

——air supplying from top and bottom or from top only
——air inlet from four directions





1.3. Compact unit body, space saving

——this unit body is very thin and harmonious with room. It is beautiful, elegant and space saving.
——lightweight and compact.

1.4. Flexible installation.

——can be used for floor standing or lower wall applications
——as a floor standing floor model, it can be semi or fully recessed without loss of capacity.

1.5. High efficiency filter

——built in Formaldehyde nemesis filter
——active-carbon and biological anti-virus filter is optional.

1.6. Comfort

——flexible air blow: vertical auto swing and wide angle louvers ensure that warm air reaches the furthest corners of the room and increase the air flow coverage
——Low noise operation, lowest to 23Db
——Low starting power and precise room temperature adjustment

1.7. Powerful mode can be selected for rapid cooling or heating.

1.8. Easy cleaning grille and maintenance

1.9. Indoor unit adopts DC motor, it has five level fan speed meet different requirements.

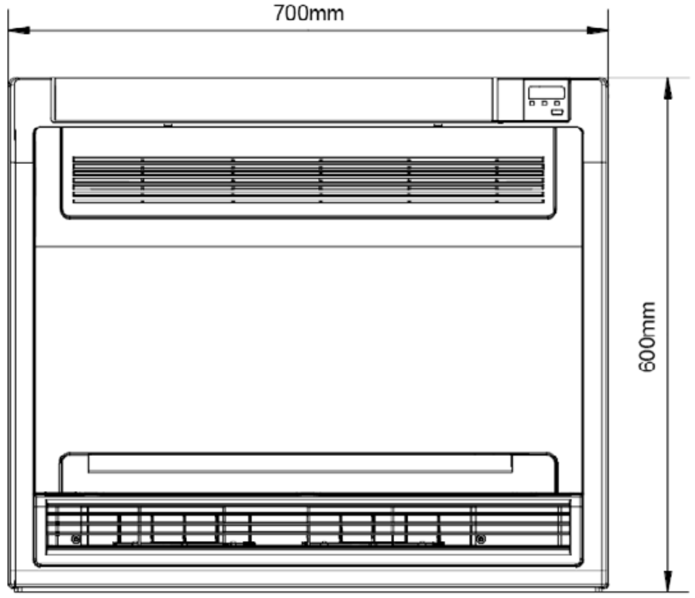
2. Specifications

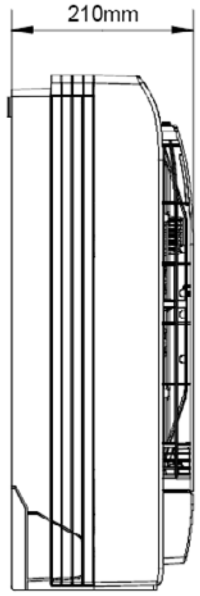
Indoor Unit	Model		HFII 351 XR	HFII 531 XR
	Power supply	V-ph-Hz	220~240-1-50	220~240-1-50
Outdoor Unit	Model		HCKI 351 XR	HCKI 532 XR
	Power supply	V-ph-Hz	220~240-1-50	220~240-1-50
Cooling	Capacity	kw	3.50	5.30
	Input	w	1075	1610
	current	A	6.8-4.3-2.0	9.72-7.08-2.26
	EER		3.26	3.29
Heating	Capacity	kw	4.00	5.90
	Input	w	1078	1590
	current	A	6.69-5.21-1.95	9.5-7.05-2.39
	COP		3.71	3.71
Indoor fan motor	Model		RD-280-20-8A	RD-280-20-8A
	Qty		1	1
	Input	W	18	28
	Capacitor	µF	/	/
	Speed(Hi/Mi/Lo)	r/min	680/610/560/460/420	890/840/780/680/530
Indoor coil	Number of rows		2	2
	Tube pitch(a)×row pitch(b)	mm	21x13.37	21x13.37
	Fin spacing	mm	1.3	1.3
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia. and type	mm	Φ7 Inner grooved copper tube	Φ7 Inner grooved copper tube
	Coil length × height × width	mm	512x378x26.74	512x378x26.74
	Number of circuits		2	2
Indoor air flow(Hi/Med/Lo)		m^3/h	550/(490)/460/380/350	740/(700)/640/560/440
Indoor noise level (Hi/Med/Lo)		dB(A)	38/(35)/33/31/28	44/(41)/39/37/34
Indoor unit	Dimension (W×H×D)	mm	700x600x210	700x600x210
	Packing (W×H×D)	mm	810x710x305	810x710x305
	Net/Gross weight	kg	15/20	15/20
Refrigerant type			R410A	R410A
Design pressure		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	φ6.4/φ12.7	φ6.4/φ12.7
Drainage water pipe diameter		mm	ODφ16	ODφ16
Controller			R51D/E (standard)	R51D/E (standard)
Operation temperature		℃	17-30	17-30

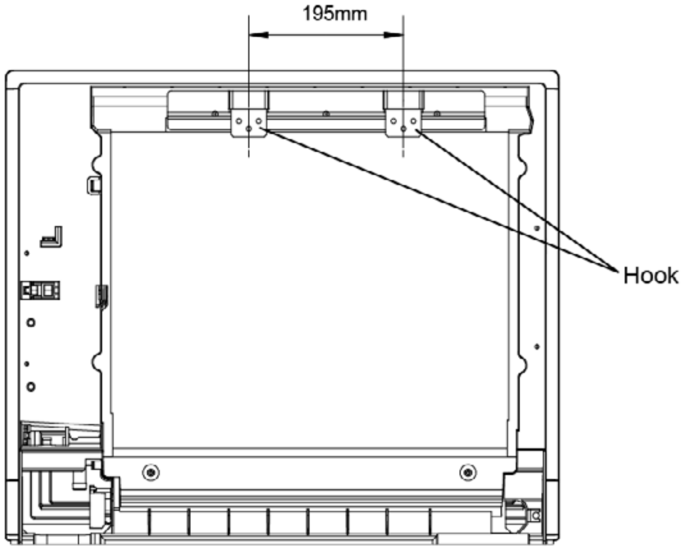
Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB;
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB;
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

3. Dimensions

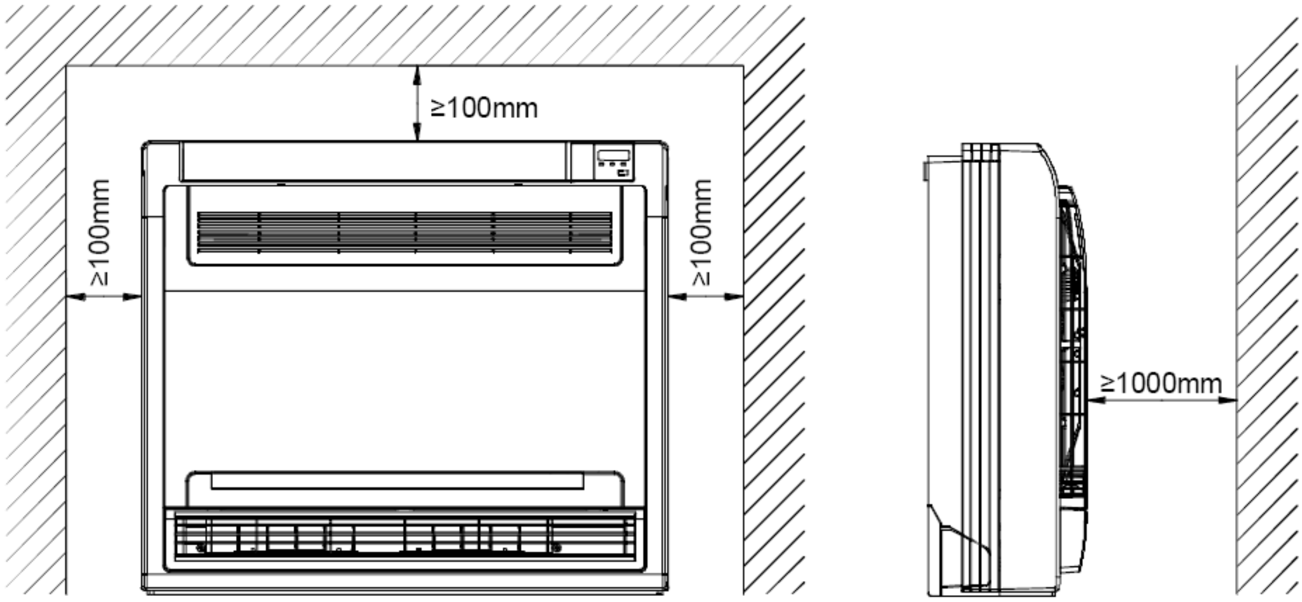
HFII 351 XR / HFII 531 XR





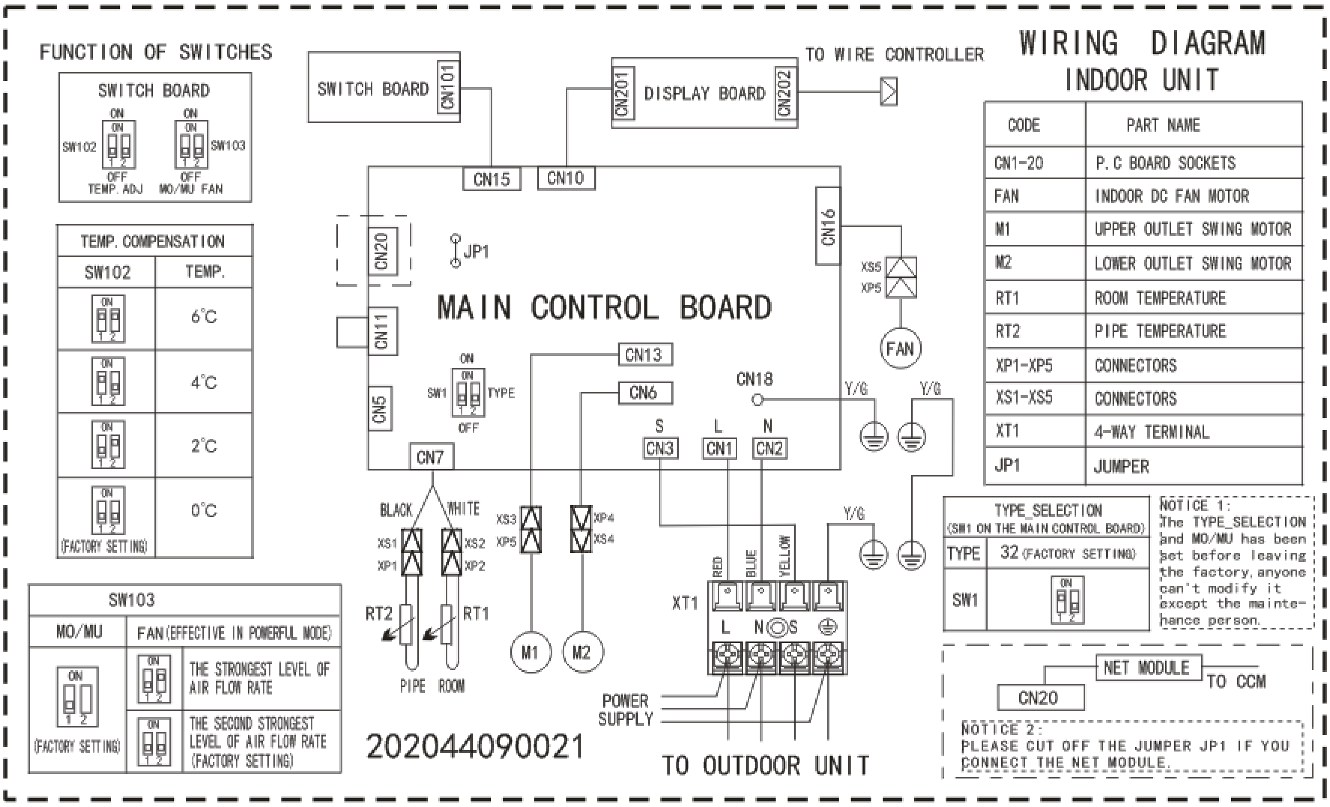


4. Service Space

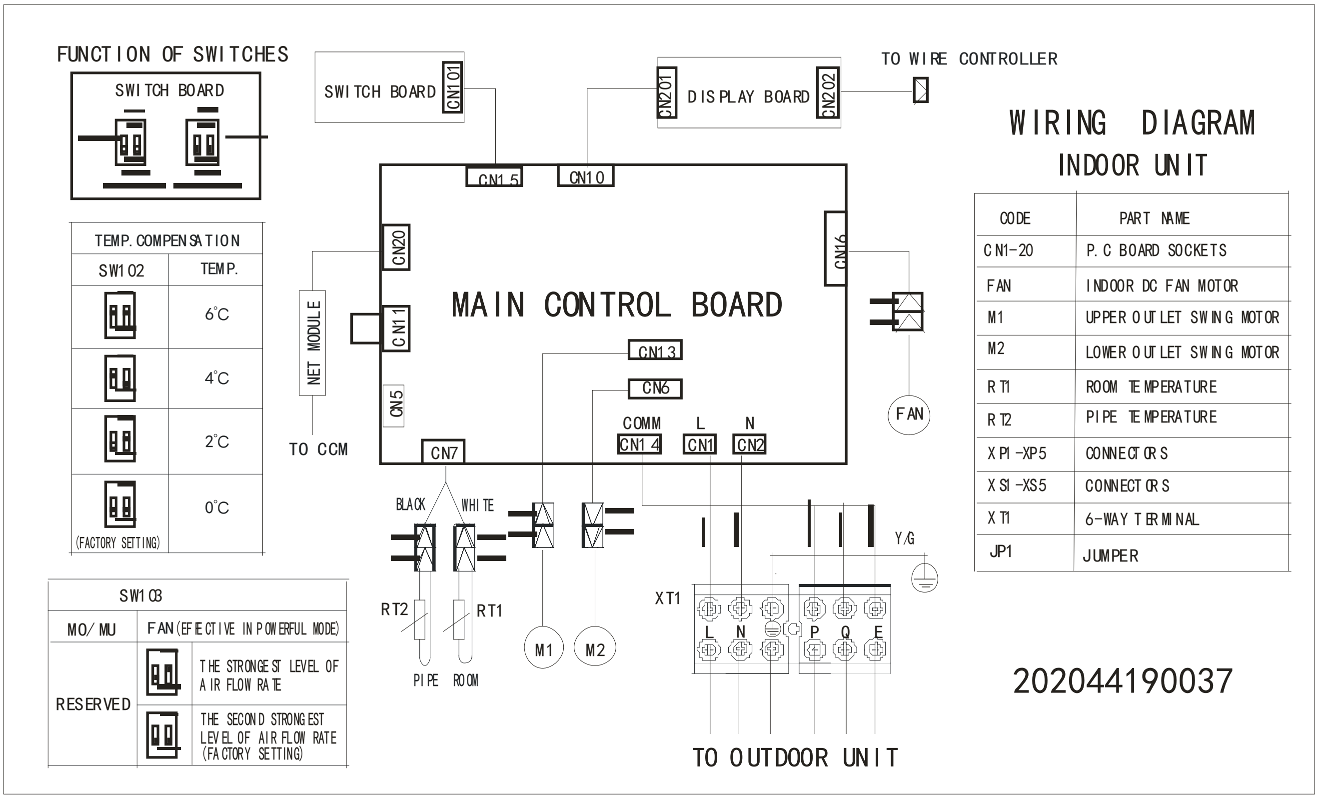


5. Wiring Diagrams

HFII 351 XR



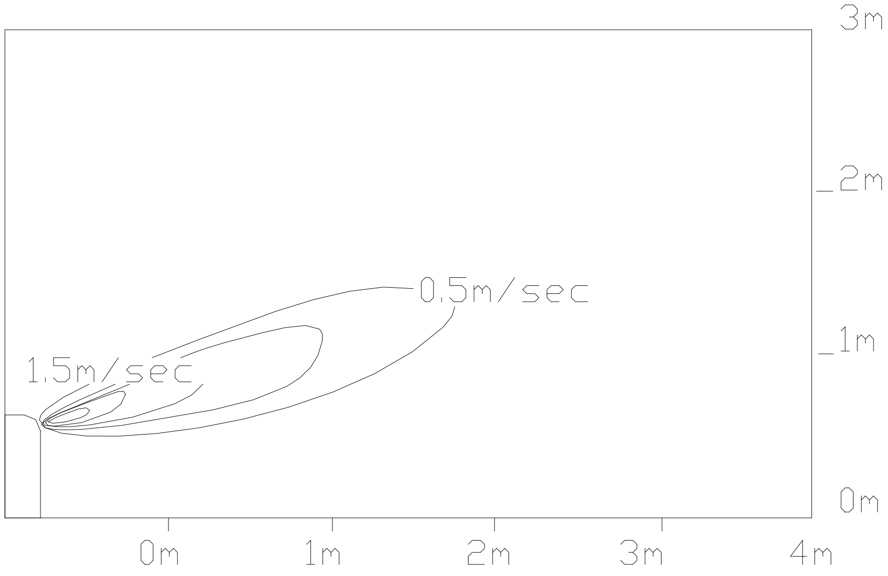
HFII 531 XR



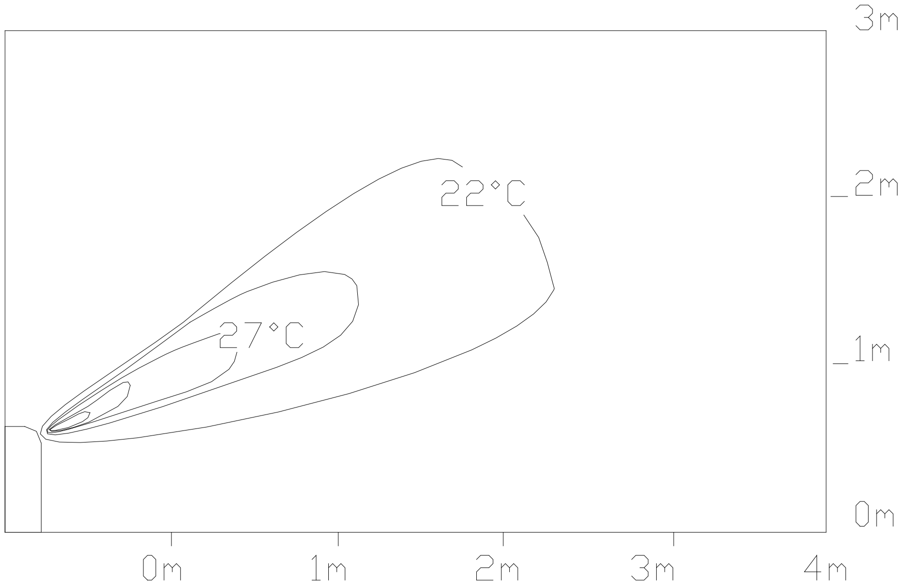
6. Air Velocity and Temperature Distributions

Discharge angle 60

Airflow velocity



Temperature

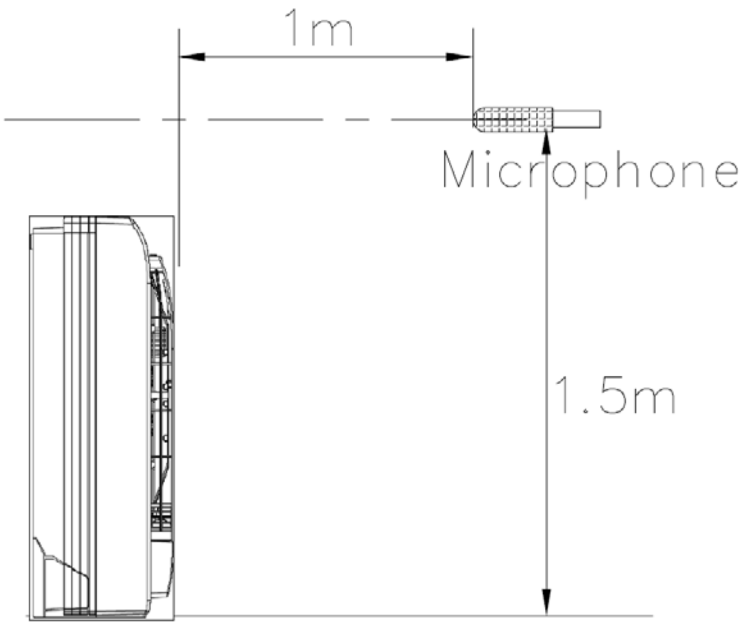


7. Electric Characteristics

Model	Indoor Unit				Power Supply
	Hz	Voltage	Min	Max	MFA
HFII 351 XR	50	220~240V	198V	254V	16
HFII 531 XR	50	220~240V	198V	254V	16

Remark:
MFA: Max. Fuse Amps. (A)

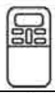
8. Sound Levels



Model	Noise level dB(A)				
	Highest	Higher	H	M	L
HFII 351 XR	38	35	33	31	28
HFII 531 XR	44	41	39	37	34

9. Accessories

HFII 351 XR/ HFII 531 XR

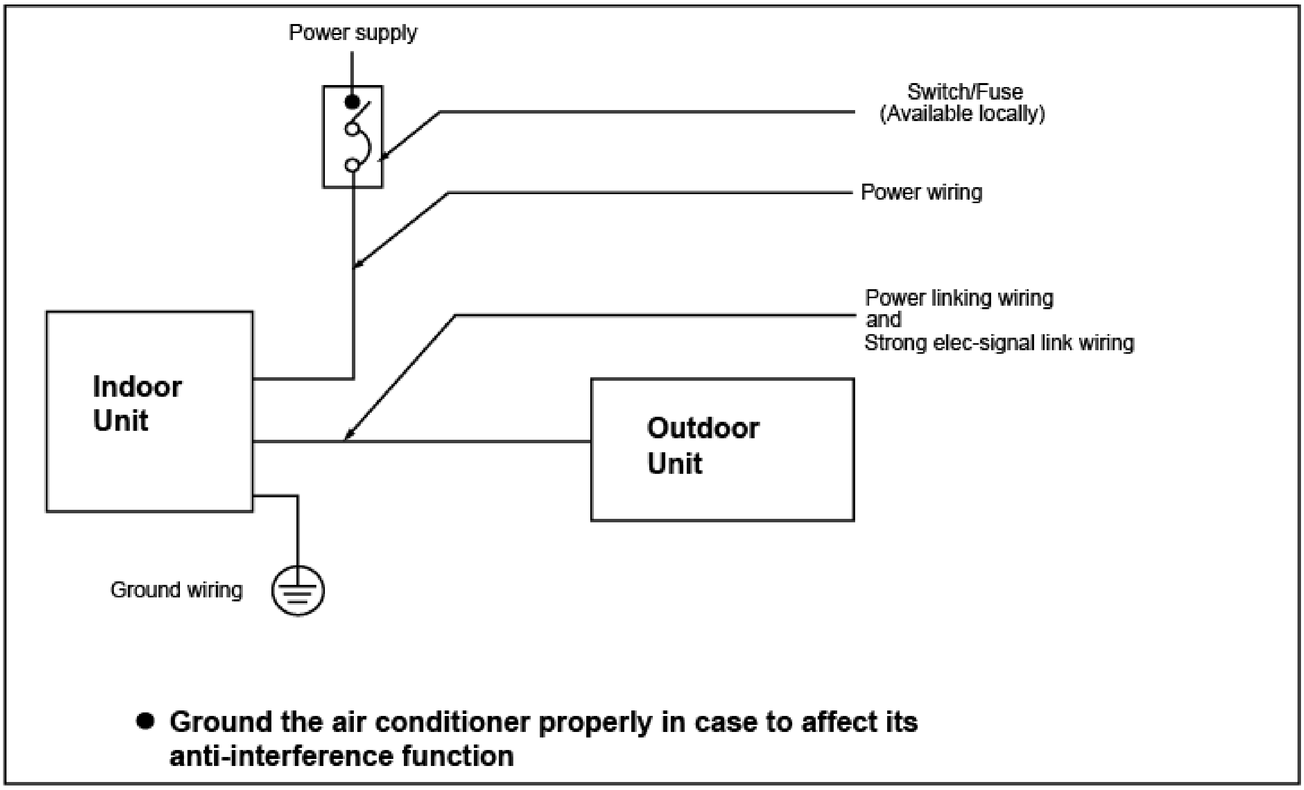
	Name	Shape	Quantity
Installation fittings	Hook		2
Remote controller & Its Frame	Remote controller		1
	Frame		1
	Mounting screw(ST2.9×10-C-H)		2
	Alkaline dry batteries (AM4)		2
Others	Installation manual	/	1
	Owner's manual	/	1

10. The Specification of Power

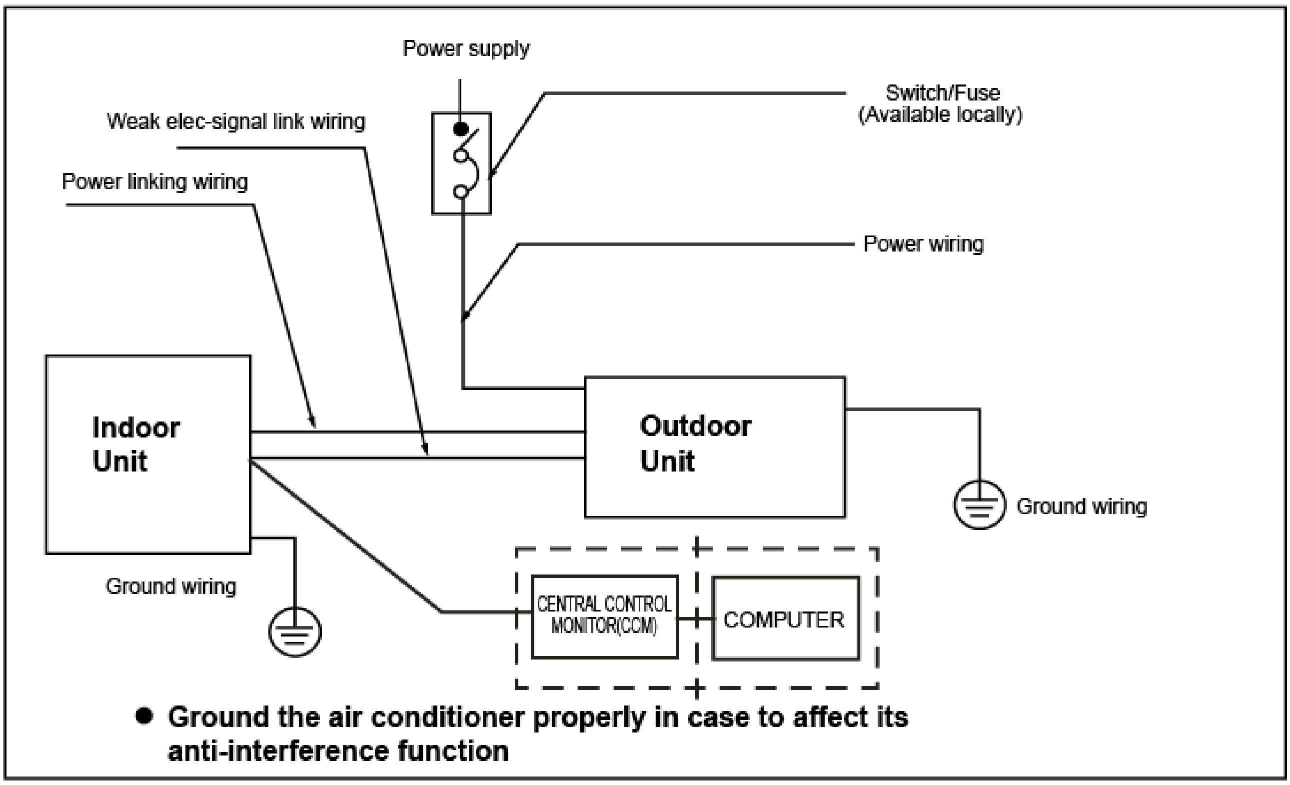
TYPE		12000Btu/h (Cooling & Heating)	18000Btu/h (Cooling & Heating)
POWER	PHASE	1-PHASE	1-PHASE
	FREQUENCY AND VOLT	220-240V~, 50Hz	220-240V~, 50Hz
CIRCUIT BREAKER/FUSE (A)		20/16	20/16
INDOOR UNIT POWER WIRING (mm^2)		3x1.5	———
INDOOR/OUTDOOR CONNECTING WIRING (mm^2)	GROUND WIRING	1.5	2.5
	OUTDOOR UNIT POWER WIRING	———	3x2.5
	STRONG ELECTRIC SIGNAL	4X1.5	3X1.5
	WEAK ELECTRIC SIGNAL	———	3X0.5

11. Field Wiring

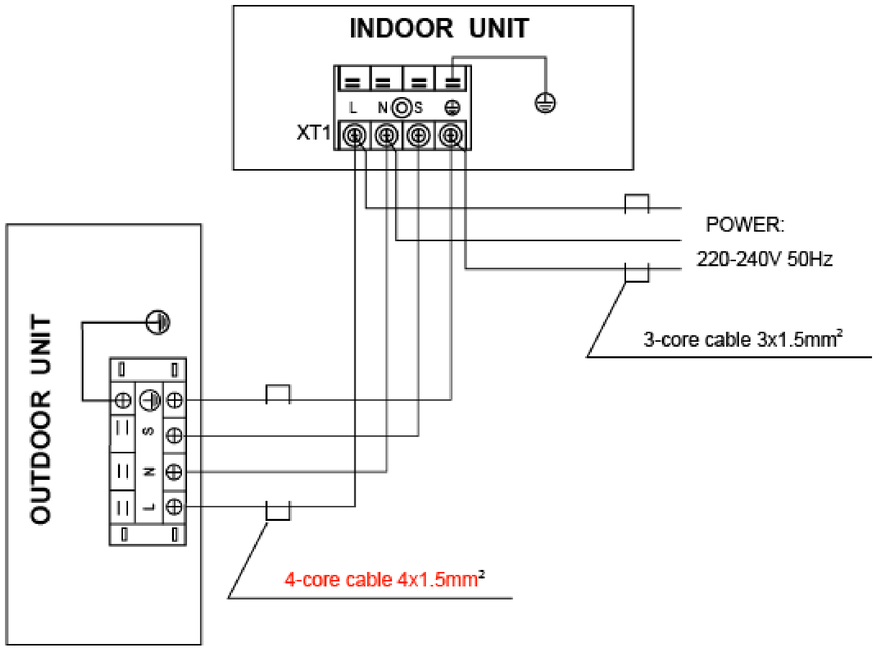
Installing wiring chart, refer to link circuit chart for details.



(For 12000Btu/h)

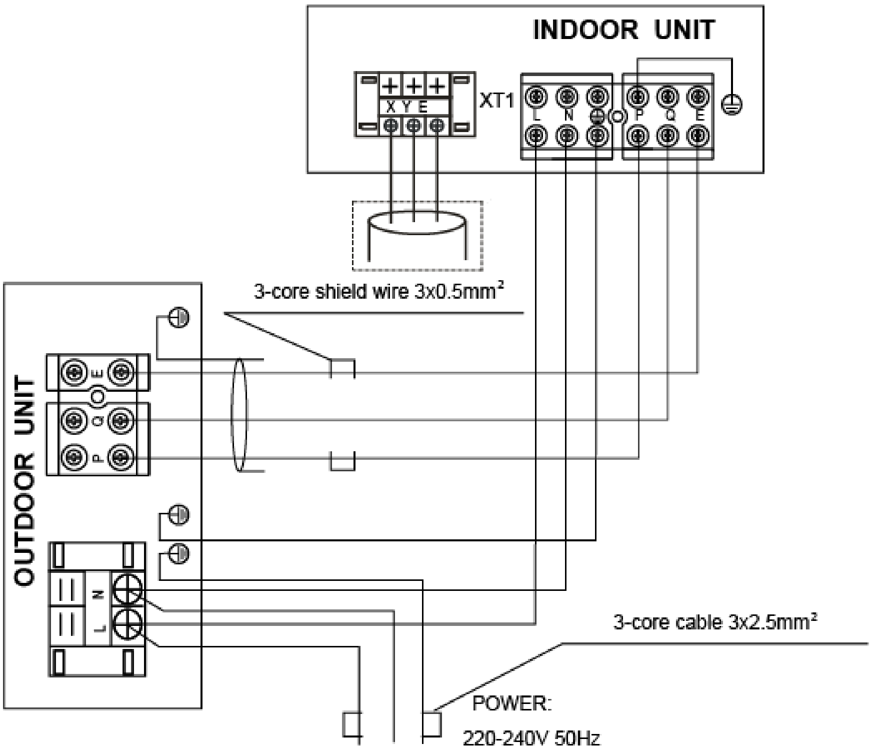


(For 18000Btu/h)



12000Btu/h(1 PHASE)

Air Conditioner Link-circuit (For R410a,Cooling& Heating)



18000Btu/h(1 PHASE)

Air Conditioner Link-circuit (For R410a ,Cooling& Heating)

Part 3
Outdoor Units

1. Specification

Outdoor		Model name	**HCKI 351 XR**	**HCKI 532 XR**
		Power supply	220~240V-1 Ph-50Hz	220~240V-1 Ph-50Hz
Max. input consumption		W	1500	2400
Max. current		A	7.0	13.1
Compressor	Model		DA108X1C-20FZ3	C-6RVN93H0V
	Type		Rotary DC Inverter	Scroll DC Inverter
	Brand		GMCC	Shenyang SANYO
	Capacity	Btu/h	10918.4	19277.8
	Input	W	855	1470
	Rated current(RLA)	A	5.3	8.96
	Refrigerant oil	ml	ESTER OIL VG74 480ml	FV 50S, 350
Outdoor fan motor	Model		YDK24-6G	YDK53-6Y
	Qty		1	1
	Input	W	67/48	129/86
	Capacitor	uF	/	3uF/450V
	Speed	r/min	800/550	770/560
Outdoor coil	Number of rows		2	2
	Tube pitch(a)x row pitch(b)	mm	25.4×22	22×19.05
	Fin spacing	mm	1.4	1.4
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia. and type	mm	Φ9.53 Inner grooved copper tube	Φ97.94 Inner grooved copper tube
	Coil length x height x width	mm	654×558.8×44	778×660×38.1
	Number of circuits		2	2
Outdoor air flow(Hi/Low)		m^3/h	2500/1600	2570/2300
Sound level(sound pressure)(Hi/Low)		dB(A)	48/44	51/46
Outdoor unit	Dimension(W x D x H)	mm	761×593×279	842×695×324
	Packing (W x D x H)	mm	887×655×355	965x752x399
	Net/Gross weight	kg	39.5/42.5	59/63
Refrigerant	Type		R410A	R410A
	Charged volume	g	1400	1600
Throttle type			Capillary	Electronic expansion valve & Capillary
Design pressure(Hi/Low)		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	Φ6.4/Φ12.7	Φ6.4/Φ12.7
	Max. refrigerant pipe length	m	10	25
	Max. difference in level	m	5	12
Ambient temp (Outdoor)		℃	Cooling：-5~43; Heating：-5~24	Cooling：-15~43; Heating：-15~24

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB;
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB;
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Outdoor		Model name	**HCKI 712 XR**
		Power supply	220~240V-1 Ph-50Hz
Max. input consumption		W	3250
Max. current		A	15.48
Compressor	Model		ATL165SD-C9AU
	Type		Rotary DC Inverter
	Brand		HITACHI
	Capacity	Btu/h	15525
	Input	W	1530
	Rated current(RLA)	A	10.4
	Refrigerant oil	ml	68HES-H,880
Outdoor fan motor	Model		YDK53-6Z
	Qty		1
	Input	W	141.5/92
	Capacitor	uF	3uF/450V
	Speed	r/min	815/550
Outdoor coil	Number of rows		2
	Tube pitch(a)x row pitch(b)	mm	25.4 x 22
	Fin spacing	mm	1.5
	Fin type (code)		Hydrophilic aluminum
	Tube outside dia. and type	mm	Φ9.53 Inner grooved copper tube
	Coil length x height x width	mm	758x813x44
	Number of circuits		2
Outdoor air flow(Hi/Low)		m^3/h	3200/2850
Sound level(sound pressure)(Hi/Low)		dB(A)	53/48
Outdoor unit	Dimension(W x D x H)	mm	895×862×313
	Packing (W x D x H)	mm	1043×915×395
	Net/Gross weight	kg	73/76
Refrigerant	Type		R410A
	Charged volume	g	2300
Throttle type			Electronic expansion valve & Capillary
Design pressure(Hi/Low)		MPa	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	Φ9.5/Φ15.9
	Max. refrigerant pipe length	m	25
	Max. difference in level	m	12
Ambient temp (Outdoor)		℃	Cooling：-15~43; Heating：-15~24

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB;
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB;
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Outdoor		Model name	**HCSI 1083 XR**
		Power supply	380V~3 Ph-50Hz
Max. input consumption		W	5500
Max. current		A	10
Compressor	Model		TNB306FPNM
	Type		Rotary DC Inverter
	Brand		MITSUBISHI ELECTRIC
	Capacity	Btu/h	33710
	Input	W	3010
	Rated current(RLA)	A	9.3
	Refrigerant oil	ml	FV50S, 870
Outdoor fan motor	Model		YDK250-6E
	Qty		1
	Input	W	307/194
	Capacitor	uF	10uF±5% 450V
	Speed	r/min	740/530
Outdoor coil	Number of rows		2
	Tube pitch(a)x row pitch(b)	mm	25.4×22
	Fin spacing	mm	1.7
	Fin type (code)		Hydrophilic aluminum
	Tube outside dia. and type	mm	Φ9.53 Inner grooved copper tube
	Coil length x height x width	mm	876×914.4×44
	Number of circuits		4
Outdoor air flow(Hi/Low)		m^3/h	5000/4800
Sound level(sound pressure)(Hi/Low)		dB(A)	55/50
Outdoor unit	Dimension(W x D x H)	mm	990×966×354
	Packing (W x D x H)	mm	1120×1100×435
	Net/Gross weight	kg	87/95
Refrigerant	Type		R410A
	Charged volume	g	2900
Throttle type			Electronic expansion valve & Capillary
Design pressure(Hi/Low)		MPa	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	Φ9.5/Φ15.9
	Max. refrigerant pipe length	m	30
	Max. difference in level	m	20
Ambient temp (Outdoor)		℃	Cooling：-15~43； Heating：-15~24

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB;
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB;
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

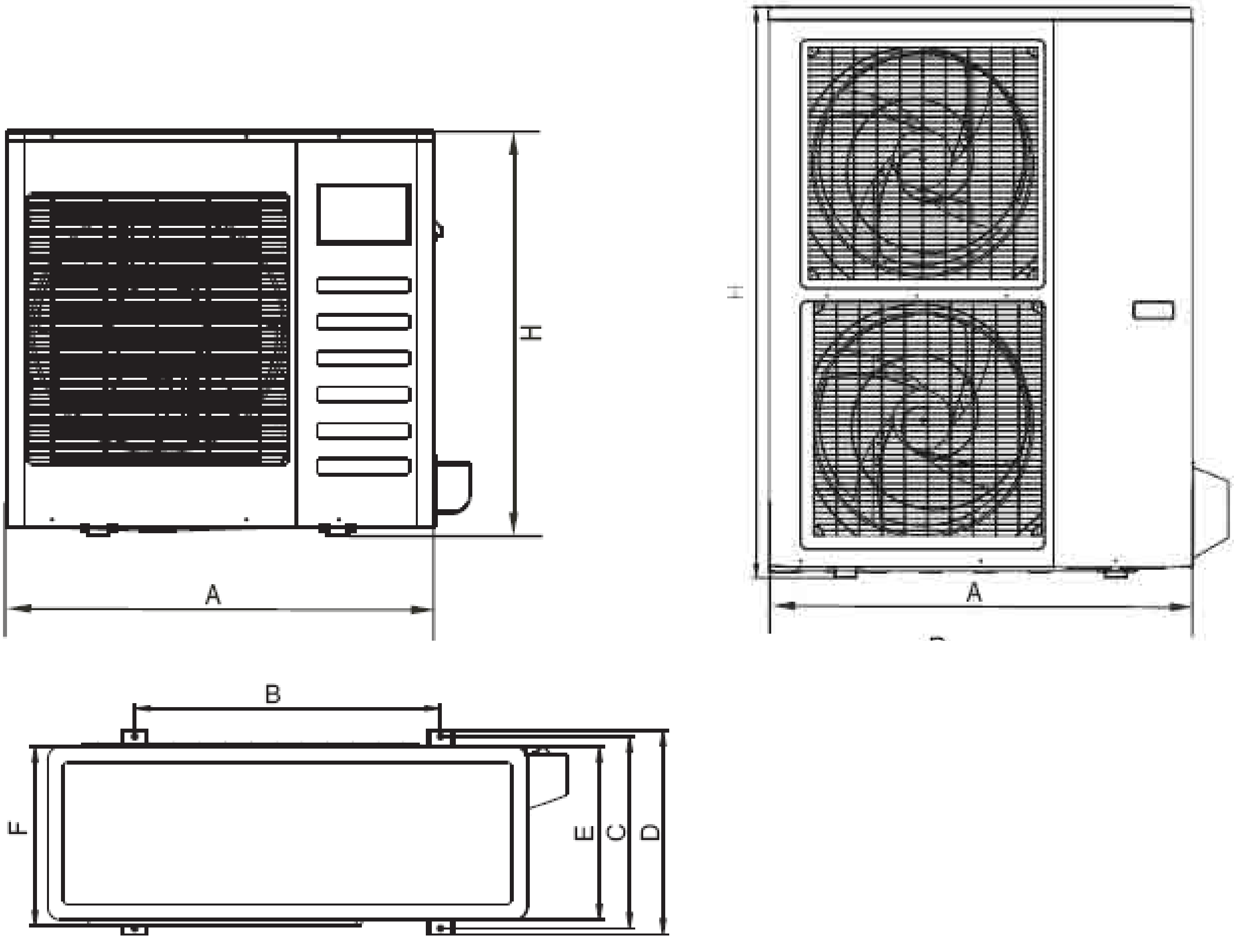
Outdoor		Model name	**HCSI 1413 XR**
		Power supply	380V~3 Ph-50Hz
Max. input consumption		W	6000
Max. current		A	12
Compressor	Model		TNB306FPNM
	Type		Rotary DC Inverter
	Brand		MITSUBISHI ELECTRIC
	Capacity	Btu/h	33710
	Input	W	3010
	Rated current(RLA)	A	9.3
	Refrigerant oil	ml	FV50S, 870
Outdoor fan motor	Model		YDK100-6A
	Qty		2
	Input	W	185/120
	Capacitor	uF	3.5uF/450V
	Speed	r/min	860/610
Outdoor coil	Number of rows		2
	Tube pitch(a)x row pitch(b)	mm	25.4×22
	Fin spacing	mm	1.7
	Fin type (code)		Hydrophilic aluminum
	Tube outside dia.and type	mm	Φ9.53 Inner grooved copper tube
	Coil length x height x width	mm	887×1220×44
	Number of circuits		8
Outdoor air flow(Hi/Low)		m^3/h	6000/5800
Sound level(sound pressure)(Hi/Low)		dB(A)	59/54
Outdoor unit	Dimension(W x D x H)	mm	940×1245×360
	Packing (W x D x H)	mm	1058×1380×438
	Net/Gross weight	kg	99/107
Refrigerant	Type		R410A
	Charged volume	g	3600
Throttle type			Electronic expansion valve & Capillary
Design pressure(Hi/Low)		MPa	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	Φ9.5/Φ15.9
	Max. refrigerant pipe length	m	50
	Max. difference in level	m	25
Ambient temp (Outdoor)		℃	Cooling：-15~43； Heating：-15~24

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB;
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB;
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Outdoor		Model name	**HCSI 1762 XR**
		Power supply	380~415V-3 Ph-50Hz
Max. input consumption		W	7200
Max. current		A	14
Compressor	Model		ANB42FBEMT
	Type		Scroll DC Inverter
	Brand		MITSUBISHI
	Capacity	Btu/h	47440
	Input	W	4160
	Rated current(RLA)	A	15.2
	Refrigerant oil	ml	MEL 56, 1700
Outdoor fan motor	Model		YDK100-6A
	Qty		2
	Input	W	185/120
	Capacitor	uF	3.5uF/450V
	Speed	r/min	860/610
Outdoor coil	Number of rows		3
	Tube pitch(a)x row pitch(b)	mm	25.4× 22
	Fin spacing	mm	1.5
	Fin type (code)		Hydrophilic aluminum
	Tube outside dia. and type	mm	Φ9.53 inner grooved copper tube
	Coil length x height x width	mm	887×1220×66
	Number of circuits		8
Outdoor air flow(Hi/Low)		m^3/h	6000/5800
Sound level(sound pressure)(Hi/Low)		dB(A)	59/54
Outdoor unit	Dimension(W x D x H)	mm	940×1245×360
	Packing (W x D x H)	mm	1058×1380×438
	Net/Gross weight	kg	124/130
Refrigerant	Type		R410A
	Charged volume	g	4000
Throttle type			Electronic expansion valve & Capillary
Design pressure(Hi/Low)		MPa	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	Φ9.5/Φ15.9
	Max. refrigerant pipe length	m	50
	Max. difference in level	m	25
Ambient temp (Outdoor)		℃	Cooling：-15~43； Heating：-15~24

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB;
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB;
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

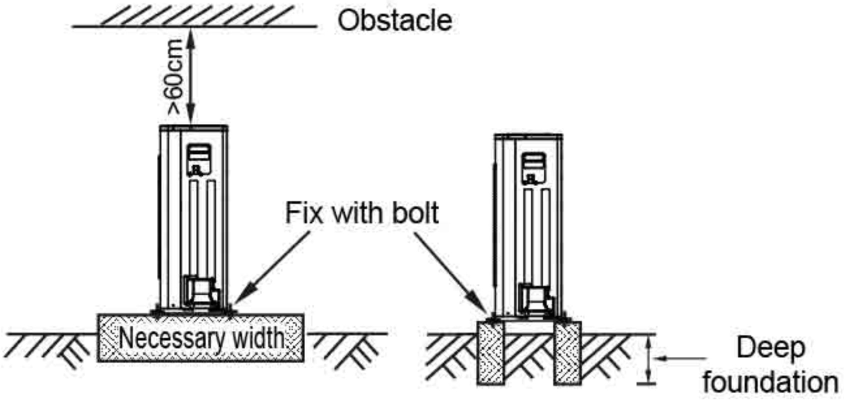
2. Dimensions

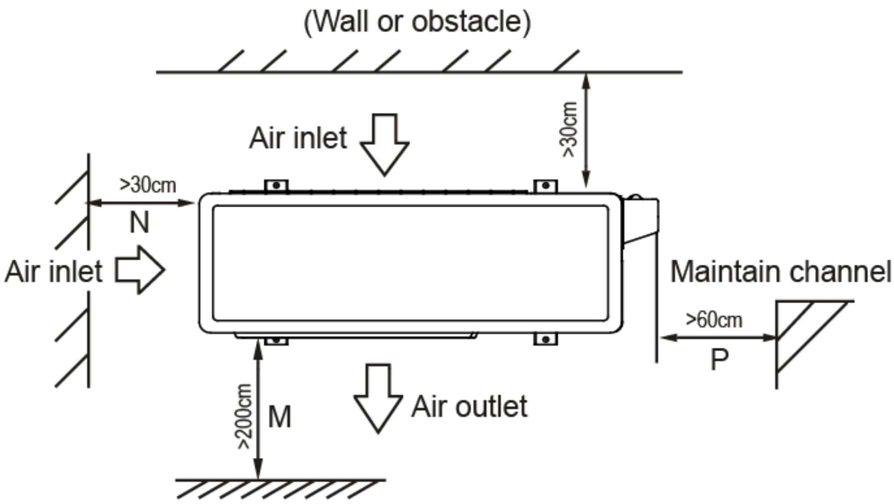


Unit: mm

MODEL	A	B	C	D	E	F	H
HCKI 351 XR	761	530	290	315	270	279	593
HCKI 532 XR	842	560	335	360	312	324	695
HCKI 712 XR	895	862	313	355	302	80	862
HCSI 1083 XR	990	624	366	396	340	354	966
HCSI 1413 XR	940	600	376	400	340	360	1245
HCSI 1762 XR	940	600	376	400	340	360	1245

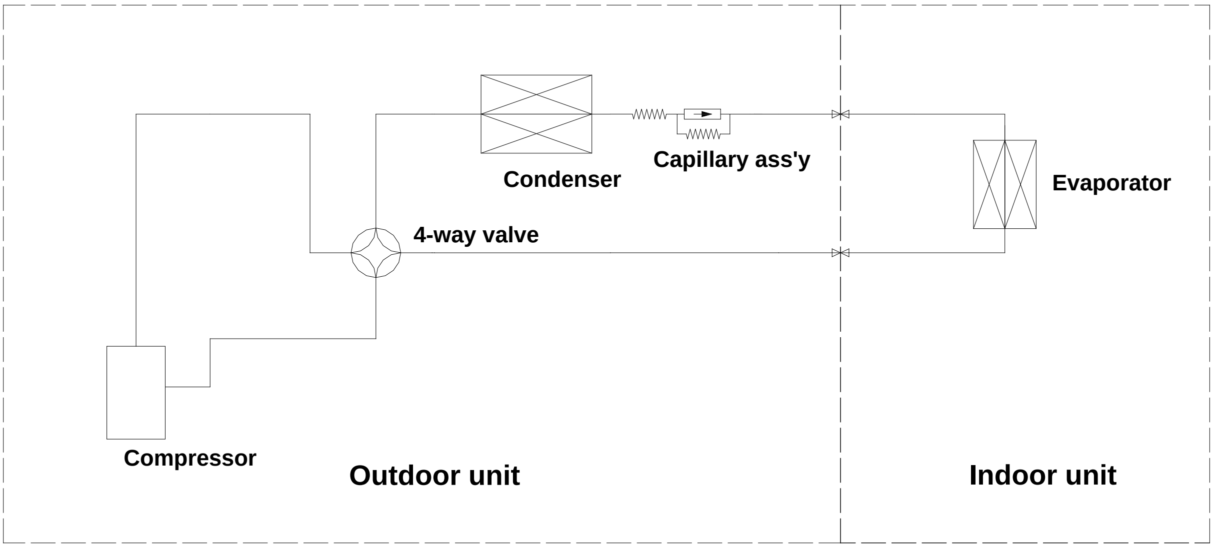
3. Service Space



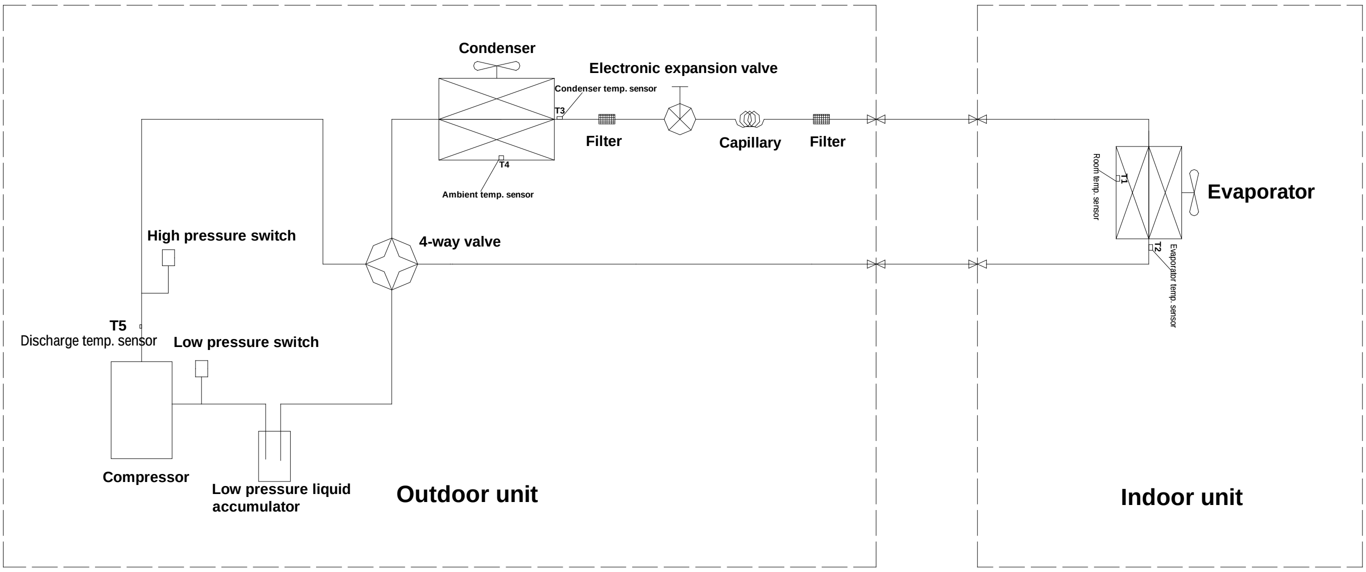


4. Piping Diagrams

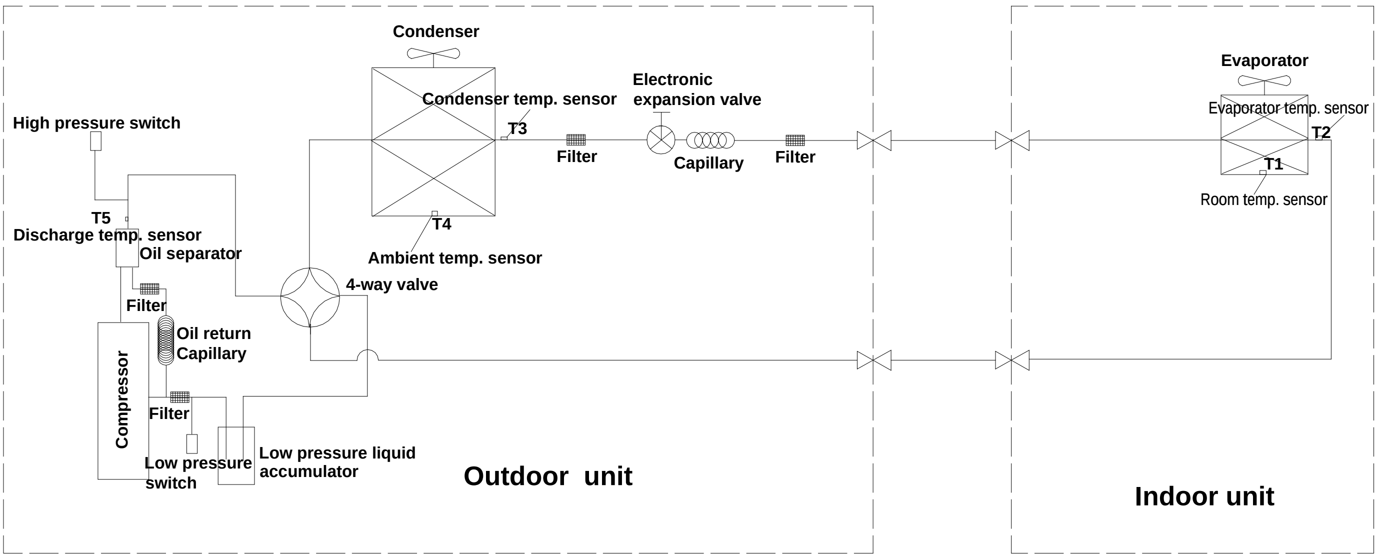
HCKI 351 XR



HCKI 532 XR、HCKI 712 XR

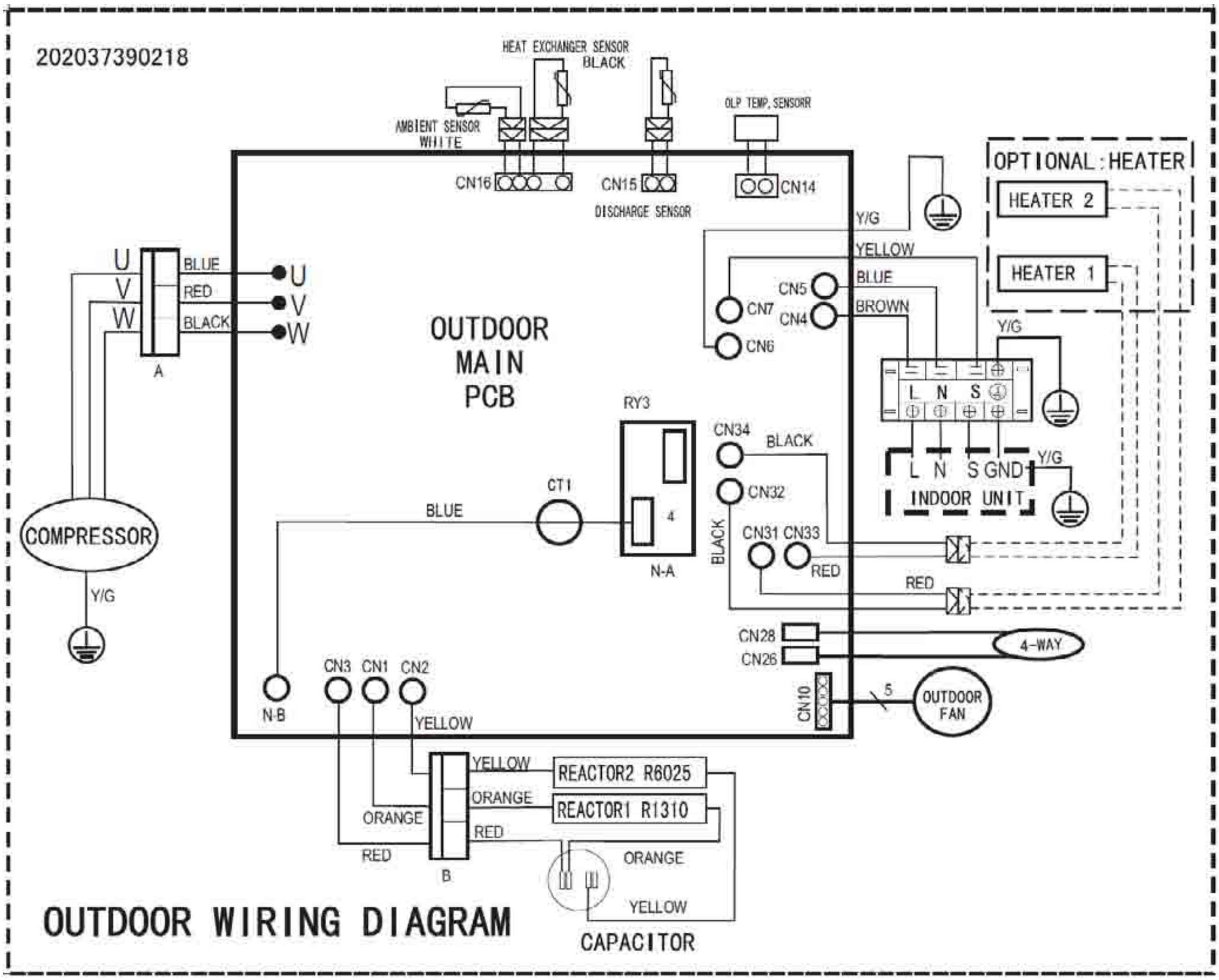


HCSI 1083 XR、HCSI 1413 XR、HCSI 1762 XR

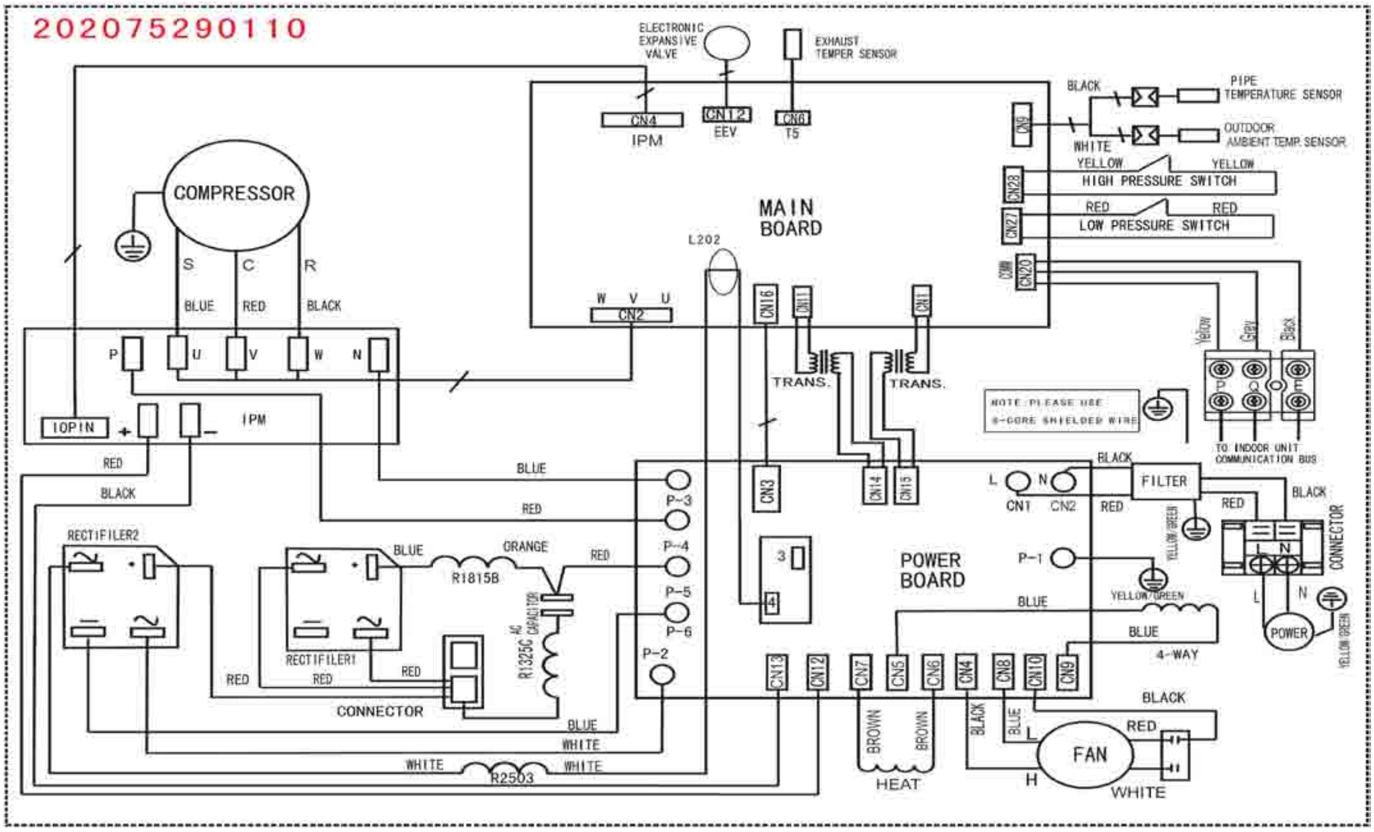


5. Wiring Diagrams

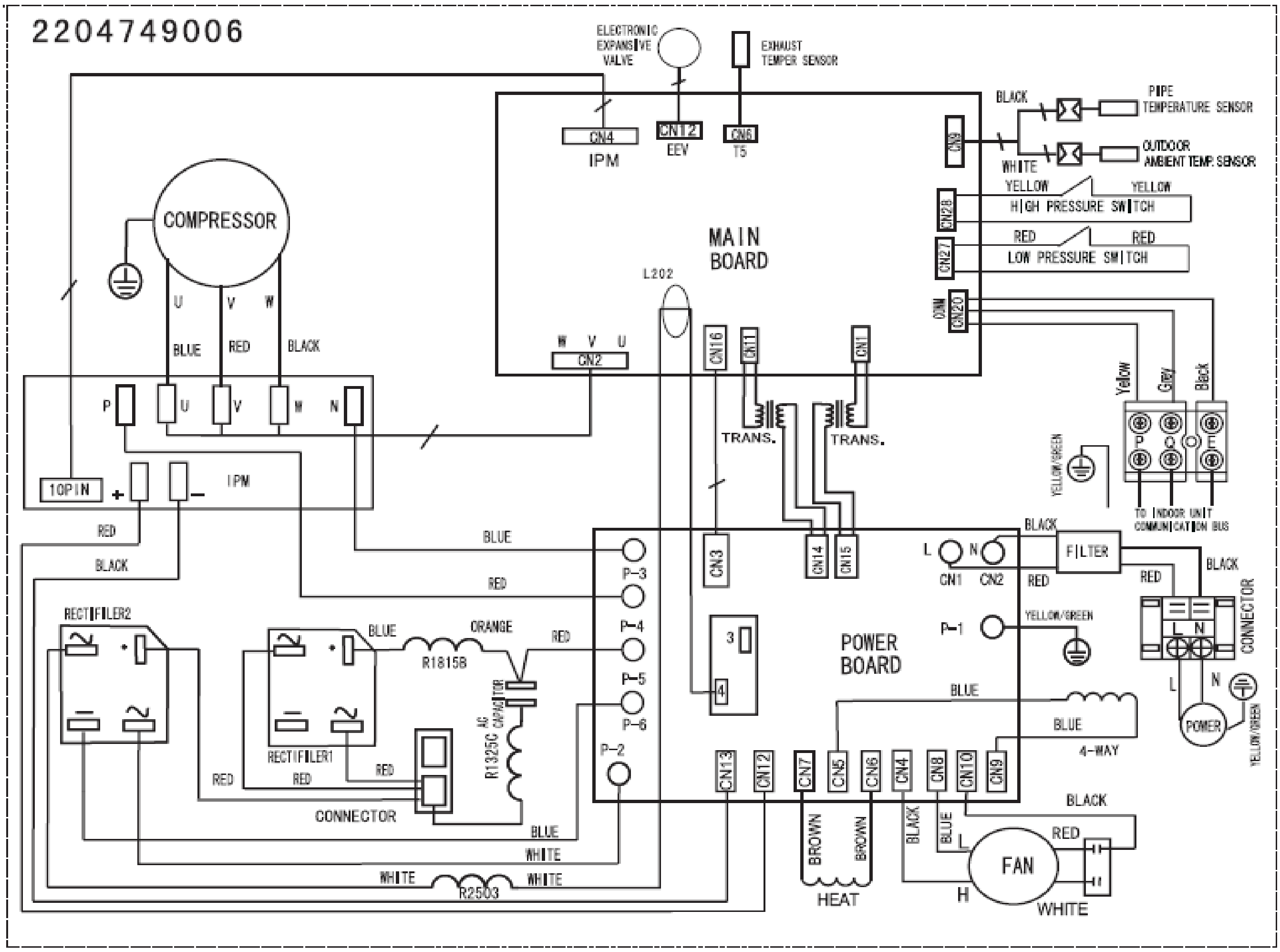
HCKI 351 XR



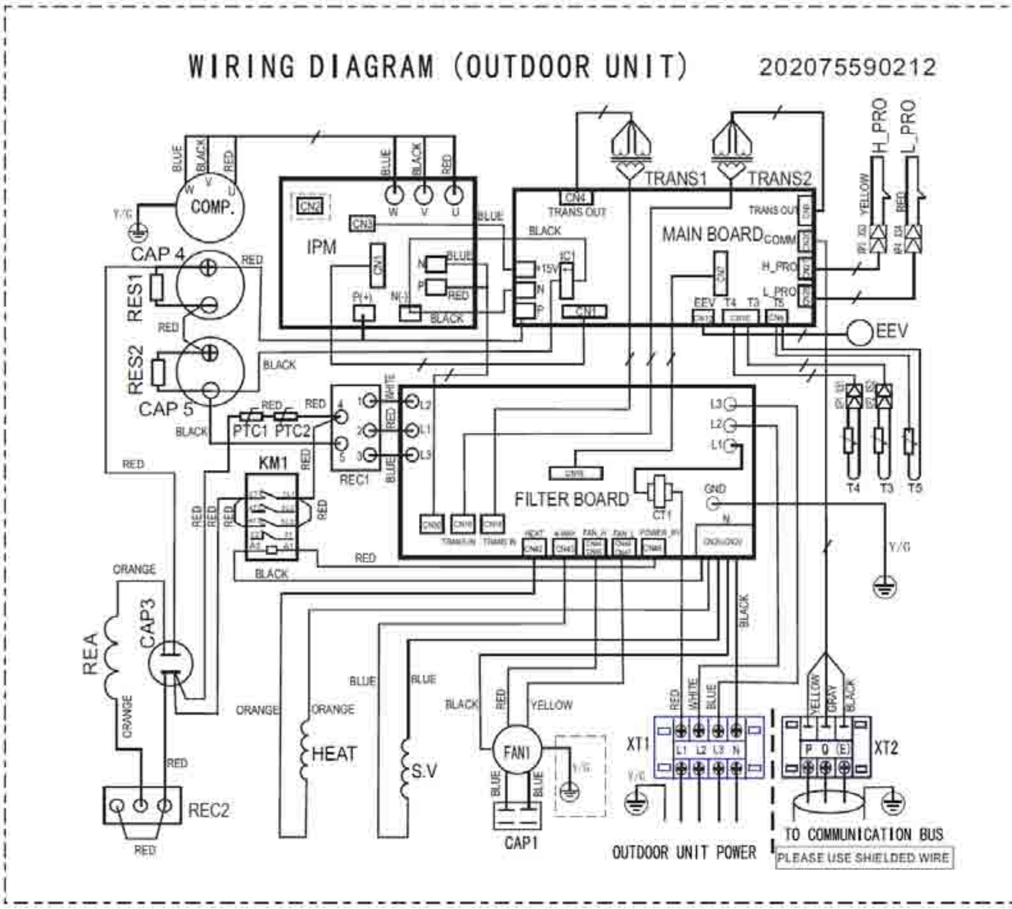
HCKI 532 XR



HCKI 712 XR



HCSI 1083 XR

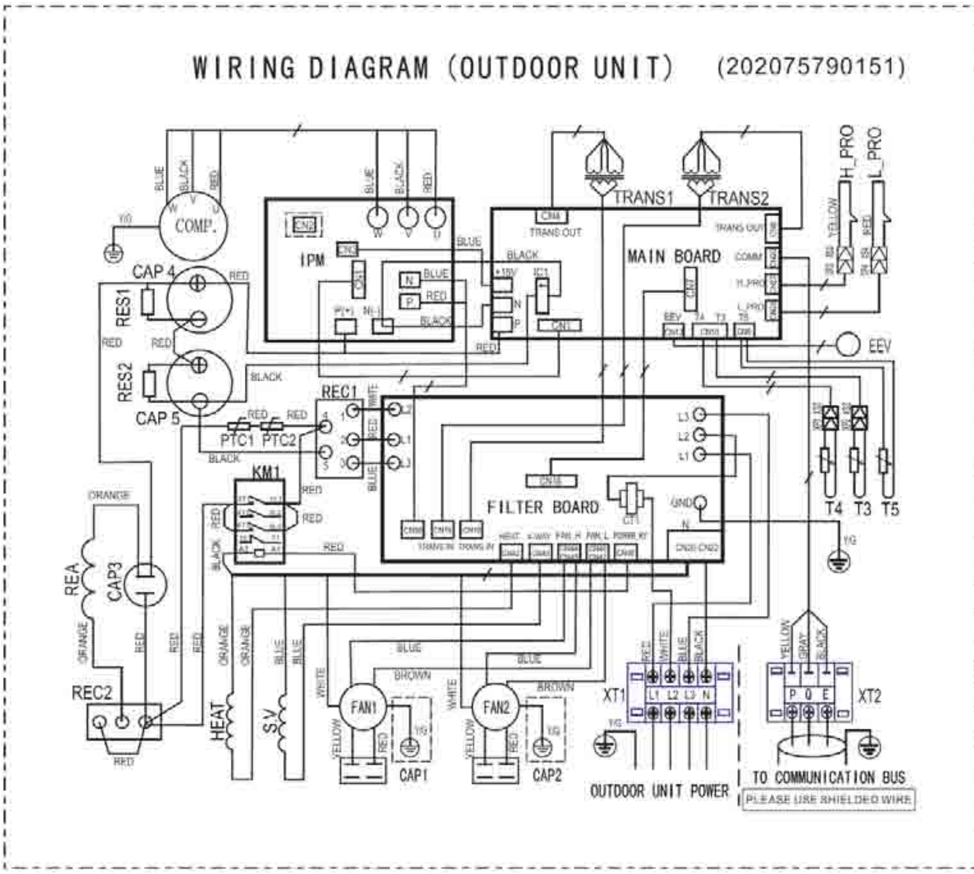


CODE	PART NAME
COMP	COMPRESSOR
CAP1-CAP5	CAPACITOR
CT1, IC1	CURRENT DETECTOR
EEV	ELECTRIC EXPANSIVE VALVE
FAN1	OUTDOOR FAN MOTOR
HEAT	CRANKCASE HEATING
H-PRO	HIGH PRESSURE SWITCH
L-PRO	LOW PRESSURE SWITCH
KM1	AC CONTACTOR
PTC1,PTC2	PTC ELEMENT
REA	REACTOR
REC1,REC2	RECTIFIER
RES1,RES2	RESISTANCE
S.V	4-WAY VALVE
TRANS1,TRANS2	TRANSFORMOR
T3	CONDENSER TEMPERATURE SENSOR
T4	OUTDOOR AMBIENT TEMPERATURE SENSOR
T5	COMP. DISCHARGE TEMPERATURE SENSOR
XS1-XS2	CONNECTOR
XP1-XP2	CONNECTOR
XT1	4-WAY TERMINAL
XT2	SMALL 3-WAY TERMINAL

Malfunction Code for Outdoor unit

Display	Malfunction or Protection
E0	EEPROM malfunction
E2	Communication malfunction between indoor/outdoor units
E3	Communication malfunction of outdoor unit controller
E4	Outdoor unit temperature sensor malfunction
E5	Power voltage protection
P1	High pressure protection
P2	Low pressure protection
P3	Current protection
P4	Compressor discharge temperature protection
P5	Condenser high temperature protection
P6	Inverter module protection

HCSI 1413 XR

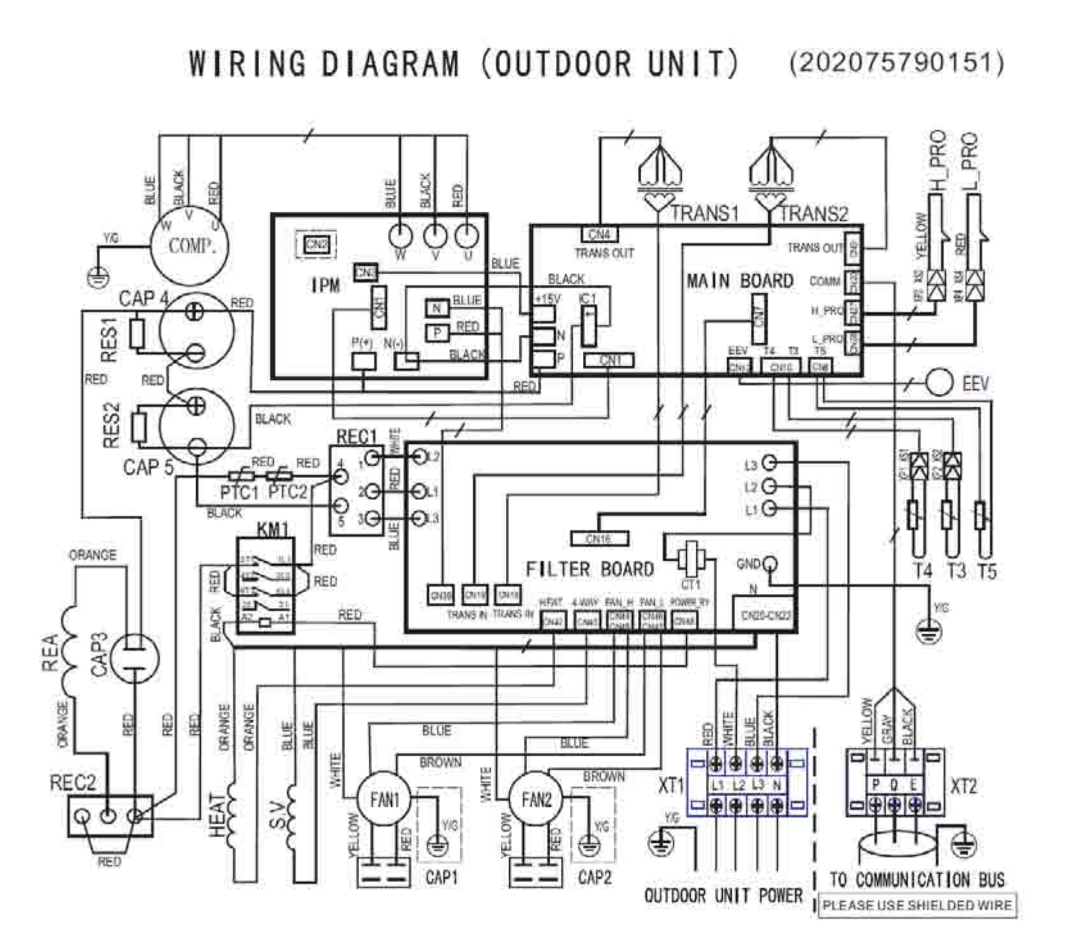


CODE	PART NAME
COMP	COMPRESSOR
CAP1-CAP5	CAPACITANCE
CT1,IC1	CURRENT DETECTOR
EEV	ELECTRIC EXPANSIVE VALVE
FAN1,FAN2	OUTDOOR FAN MOTOR
HEAT	CRANKCASE HEATING
H-PRO	HIGH PRESSURE SWITCH
L-PRO	LOW PRESSURE SWITCH
KM1	AC CONTACTOR
PTC1,PTC2	PTC ELEMENT
REA	REACTOR
REC1,REC2	RECTIFIER
RES1,RES2	RESISTANCE
S.V	4-WAY VALVE
TRANS1,TRANS2	TRANSFORMOR
T3	CONDENSER TEMPERATURE SENSOR
T4	OUTDOOR AMBIENT TEMPERATURE SENSOR
T5	COMP. DISCHARGE TEMPERATURE SENSOR
XS1-XS2	CONNECTOR
XP1-XP2	CONNECTOR
XT1	4-WAY TERMINAL
XT2	SMALL 3-WAY TERMINAL

Malfunction Code for Outdoor unit

Display	Malfunction or Protection
E0	EEPROM malfunction
E2	Communication malfunction between indoor/outdoor units
E3	Communication malfunction of outdoor unit controller
E4	Outdoor unit temperature sensor malfunction
E5	Power voltage protection
P1	High pressure protection
P2	Low pressure protection
P3	Current protection
P4	Compressor discharge temperature protection
P5	Condenser high temperature protection
P6	Inverter module protection

HCSI 1762 XR



CODE	PART NAME
COMP	COMPRESSOR
CAP1-CAP5	CAPACITANCE
CT1,IC1	CURRENT DETECTOR
EEV	ELECTRIC EXPANSIVE VALVE
FAN1,FAN2	OUTDOOR FAN MOTOR
HEAT	CRANKCASE HEATING
H-PRO	HIGH PRESSURE SWITCH
L-PRO	LOW PRESSURE SWITCH
KM1	AC CONTACTOR
PTC1,PTC2	PTC ELEMENT
REA	REACTOR
REC1,REC2	RECTIFIER
RES1,RES2	RESISTANCE
S.V	4-WAY VALVE
TRANS1,TRANS2	TRANSFORMOR
T3	CONDENSER TEMPERATURE SENSOR
T4	OUTDOOR AMBIENT TEMPERATURE SENSOR
T5	COMP. DISCHARGE TEMPERATURE SENSOR
XS1-XS2	CONNECTOR
XP1-XP2	CONNECTOR
XT1	4-WAY TERMINAL
XT2	SMALL 3-WAY TERMINAL

Malfunction Code for Outdoor unit

Display	Malfunction or Protection
E0	EEPROM malfunction
E2	Communication malfunction between indoor/outdoor units
E3	Communication malfunction of outdoor unit controller
E4	Outdoor unit temperature sensor malfunction
E5	Power voltage protection
P1	High pressure protection
P2	Low pressure protection
P3	Current protection
P4	Compressor discharge temperature protection
P5	Condenser high temperature protection
P6	Inverter module protection

6. Electric Characteristics

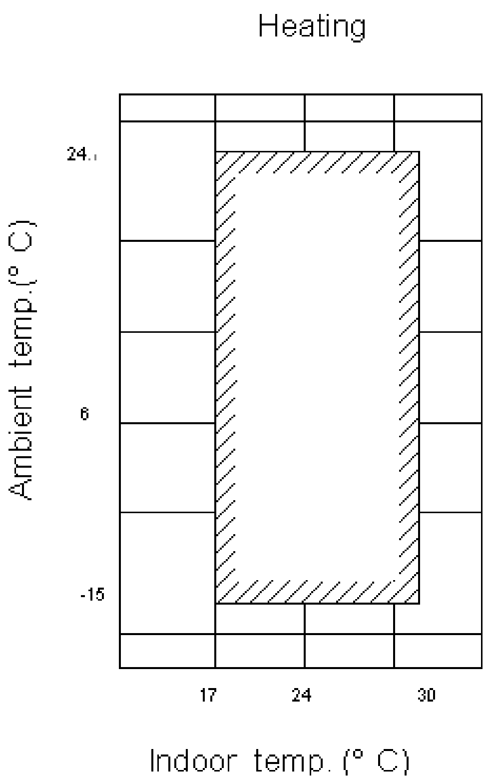
Model	Outdoor Unit				Power Supply
	Hz	Voltage	Min.	Max.	MFA
HCKI 351 XR	50	220-240	198	254	30
HCKI 532 XR	50	220-240	198	254	30
HCKI 712 XR	50	220-240	198	254	30
HCSI 1083 XR	50	380-415	342	440	40
HCSI 1413 XR	50	380-415	342	440	40
HCSI 1762 XR	50	380-415	342	440	40

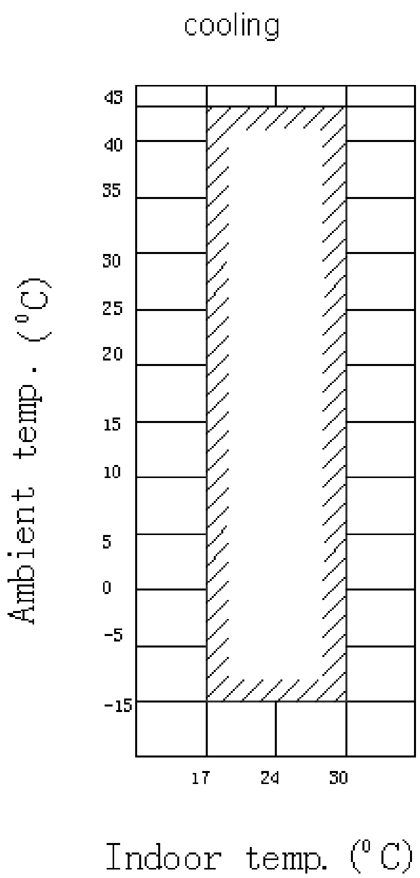
Remark:
MFA: Max. Fuse Amps. (A)

7. Operation Limits

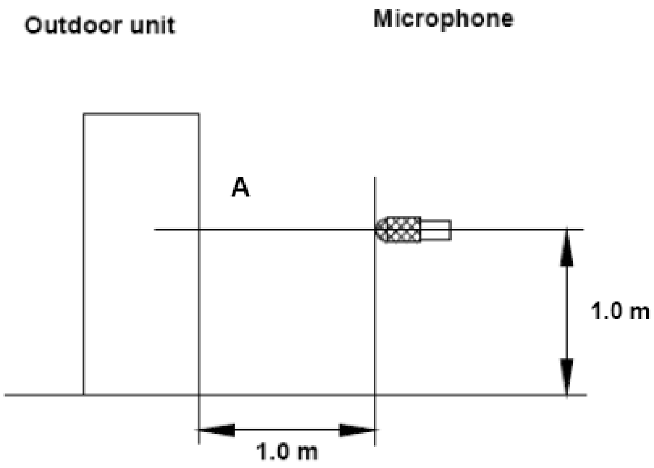
All models except HCKI 351 XR combinations

-



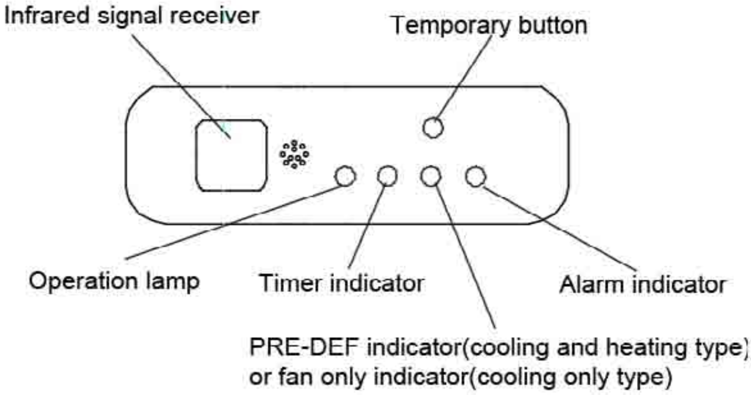


8. Sound Levels

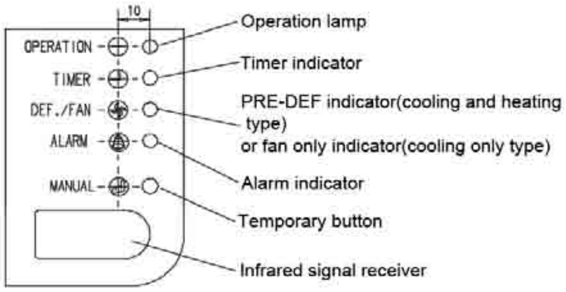


Model	Noise level dB(A)
	H/L
HCKI 351 XR	48/44
HCKI 532 XR	51/46
HCKI 712 XR	53/48
HCSI 1083 XR	55/50
HCSI 1413 XR	59/54
HCSI 1762 XR	59/54

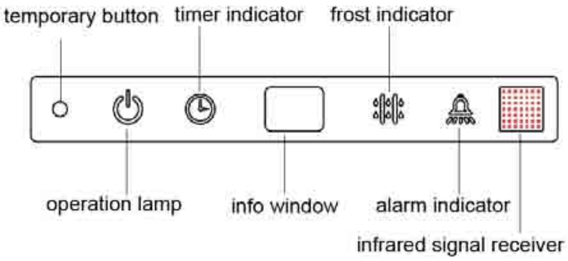
9. Troubleshooting
9.1 Indoor unit malfunction
9.1.1 Display board
Compact 4-way cassette



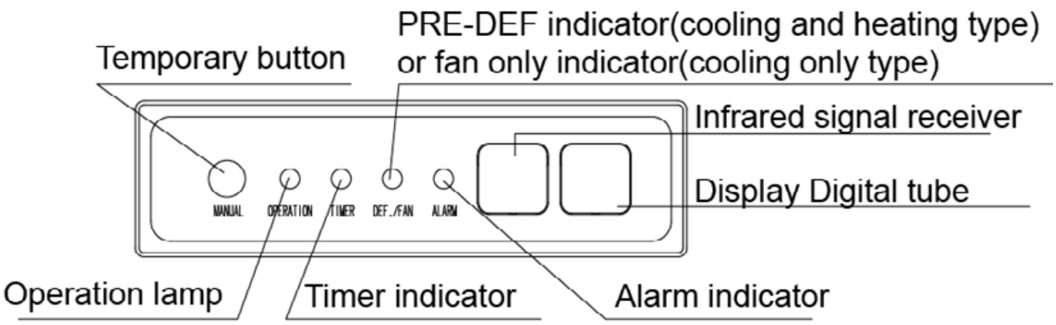
Ceiling & Floor



Normal 4-way cassette



Duct



Display panel

9.1.2 Troubleshooting

For Normal 4-way cassette

NO.	Malfunction	running lamp	timer lamp	defrosting lamp	alarm lamp	display (nixie tube)
1	In-outdoor unit communication checking channel is abnormal		LED2 Quick-flash			E1
2	Room temperature sensor checking channel is abnormal	LED1 Quick-flash				E2
3	Pipe temperature sensor (T2) checking channel is abnormall	LED1 Quick-flash				E3
4	Pipe temperature sensor (T2B) checking channel is abnormal	LED1 Quick-flash				E4
5	Water-level alarm malfunction				LED4 Quick-flash	EE
6	EEPROM malfunction	LED1 Slow-flash				E7
7	Collision model malfunction			LED3 Quick-flash		E0
8	Outdoor malfunction				LED4 Slow-flash	Ed

For compact 4-way cassette(12K)

NO.	Malfunction	Running lamp	Timer lamp	Defrosting lamp	Alarm lamp
1	In-outdoor unit communication checking channel is abnormal	×	☆	×	×
2	Room temperature senson checking channel is abnormal	☆	×	×	×
3	Evaporator sensor checking channel is abnormal	×	×	☆	×
4	Water-level alarm malfunction	×	×	×	☆
5	EEPROM malfunction	☆	☆	×	×
6	IPM module protection	☆	×	×	●
7	Condenser sensor checking channel is abnormal	☆	●	×	×
8	Outdoor unit voltage protection	☆	●	×	●
9	Outdoor unit over-current protection	☆	☆	×	☆

（× Extinguish, ☆ Flash at 5Hz, ● On）

For compact 4-way cassette(18K)&ceiling & floor & High static duct unit

NO.	Malfunction	running lamp	timer lamp	defrosting lamp	alarm lamp
1	In-outdoor unit communication checking channel is abnormal	×	☆	×	×
2	Room temperature sensor checking channel is abnormal	☆	×	×	×
3	Water-level alarm malfunction	×	×	×	☆
4	Collision model malfunction	×	×	☆	×
5	Outdoor unit malfunction	×	×	×	slow flash

（×Extinguish, ☆Flash at 5Hz）

For Duct type

NO.	MALFUNCTION & PROTECTION DEFINE	LED1 OPERATION	LED2 TIMER	LED3 DEF.FAN	LED4 ALARM	DISPLAY DIGITAL TUBE
1	Room temperature sensor checking channe is abnormal	◎				E0
2	Pipe temperature sensor checking channel is abnormal			◎		E1
3	In-Outdoor unit COMM. checking channel is abnormal		◎			E2
4	Water-level alarm malfunction				◎	E3
5	EPPROM malfunction	◎	◎			E4
6	Module malfunction	◎			●	E5
7	Outdoor TEMP. sensor checking channel is abnormal	◎	●			E6
8	Outdoor voltage protection	◎	●		●	P0
9	Compressor temperature protection	◎		●		P1
10	Outdoor current system protection	◎	◎		◎	P2
11	Be closed by the remote control function	○				CP
12	Avoid cold wind & Defrost			●		

● Light ◎ Flashing at 5HZ ○ Flashing at 1HZ

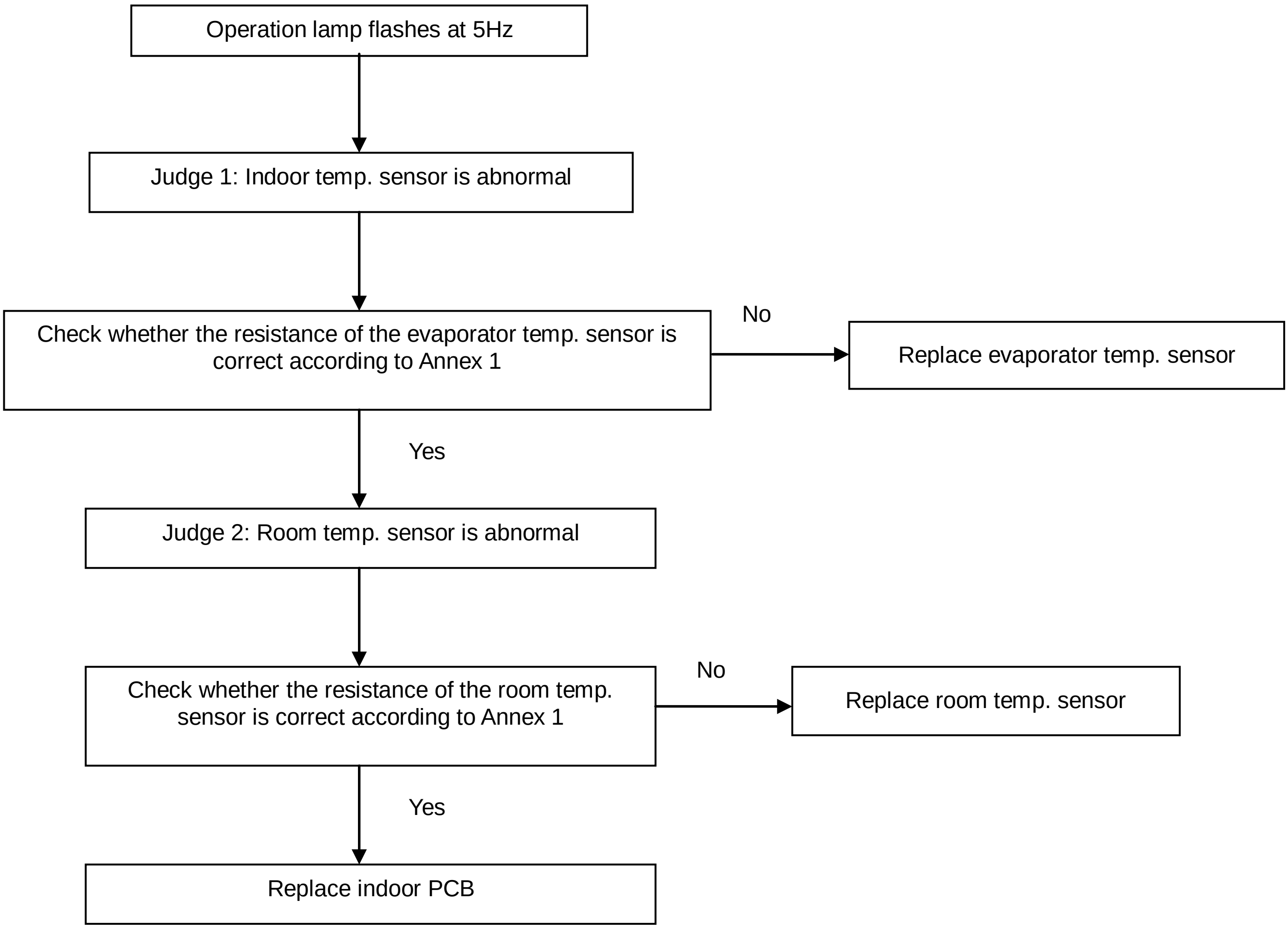
For MODEL 12

NO.	MALFUNCTION & PROTECTION DEFINE	LED1 OPERATION	LED2 TIMER	LED3 DEF.FAN	LED4 ALARM	DISPLAY DIGITAL TUBE
1	Collision mode malfunction			◎		E0
2	In-Outdoor unit COMM. Checking channel is abnormal		◎			E1
3	Room TEMP. sensor checking channel is abnormal	◎				E2
4	Pipe TEMP. Sensor checking channel is abnormal(T2)	◎				E3
5	Pipe TEMP. Sensor checking channel is abnormal(T2B)	◎				E4
6	EPPROM malfunction	○				E7
7	Water-level alarm malfunction				◎	EE
8	Outdoor malfunction				○	Ed
9	Be closed by the remote control function	○				CP
10	Avoid cold fan & Defrost	●		●		

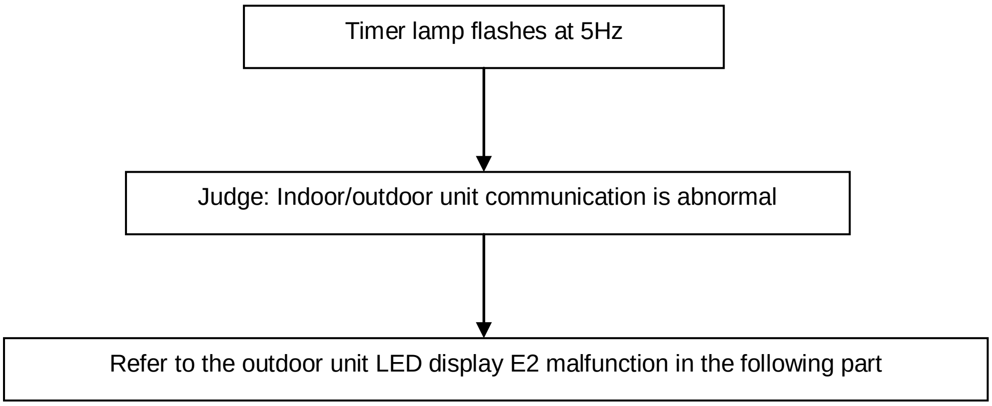
● Light ◎ Flashing at 5HZ ○ Flashing at 1HZ

For MODEL 18-60

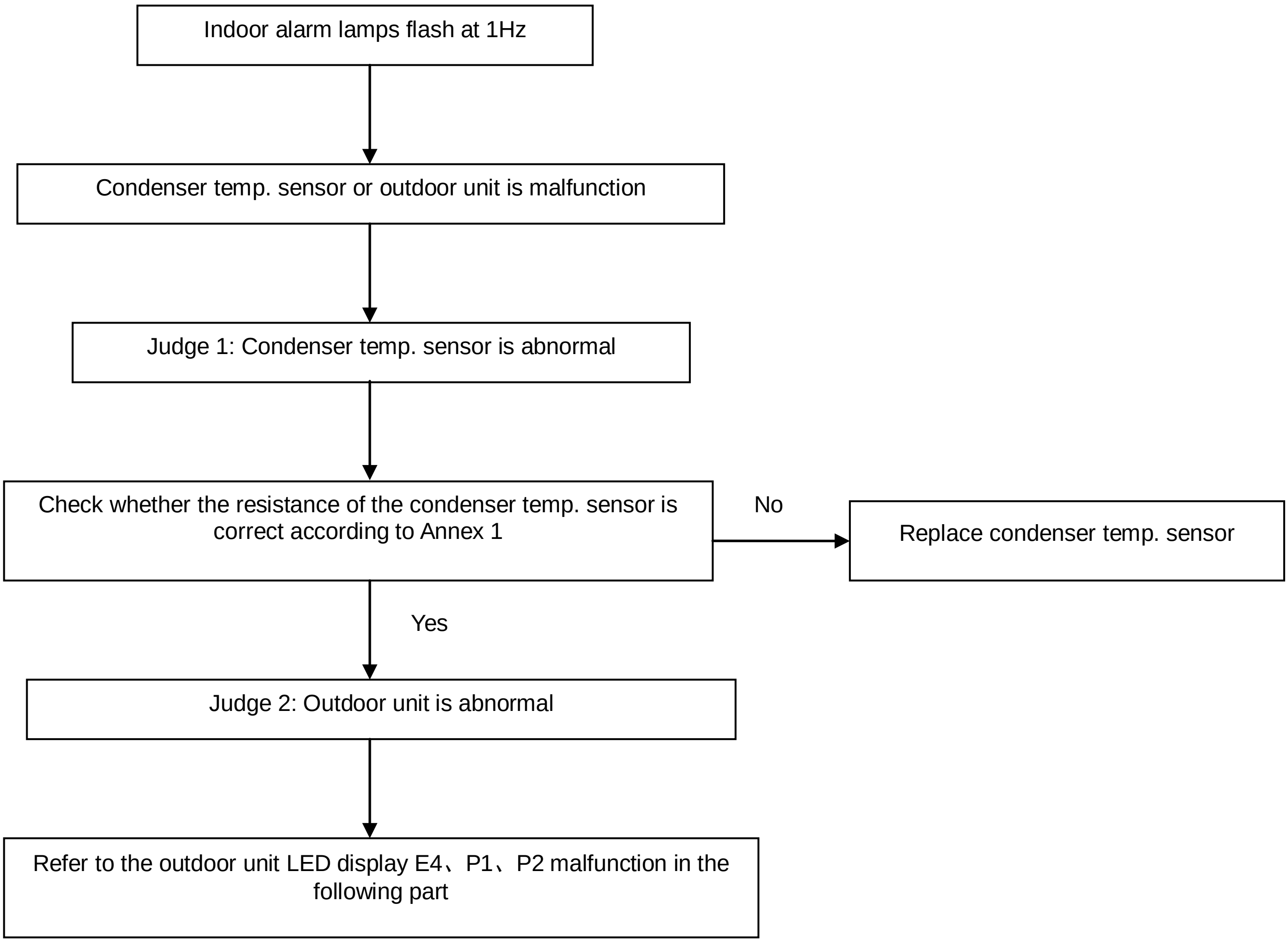
1. Operation lamp flashes



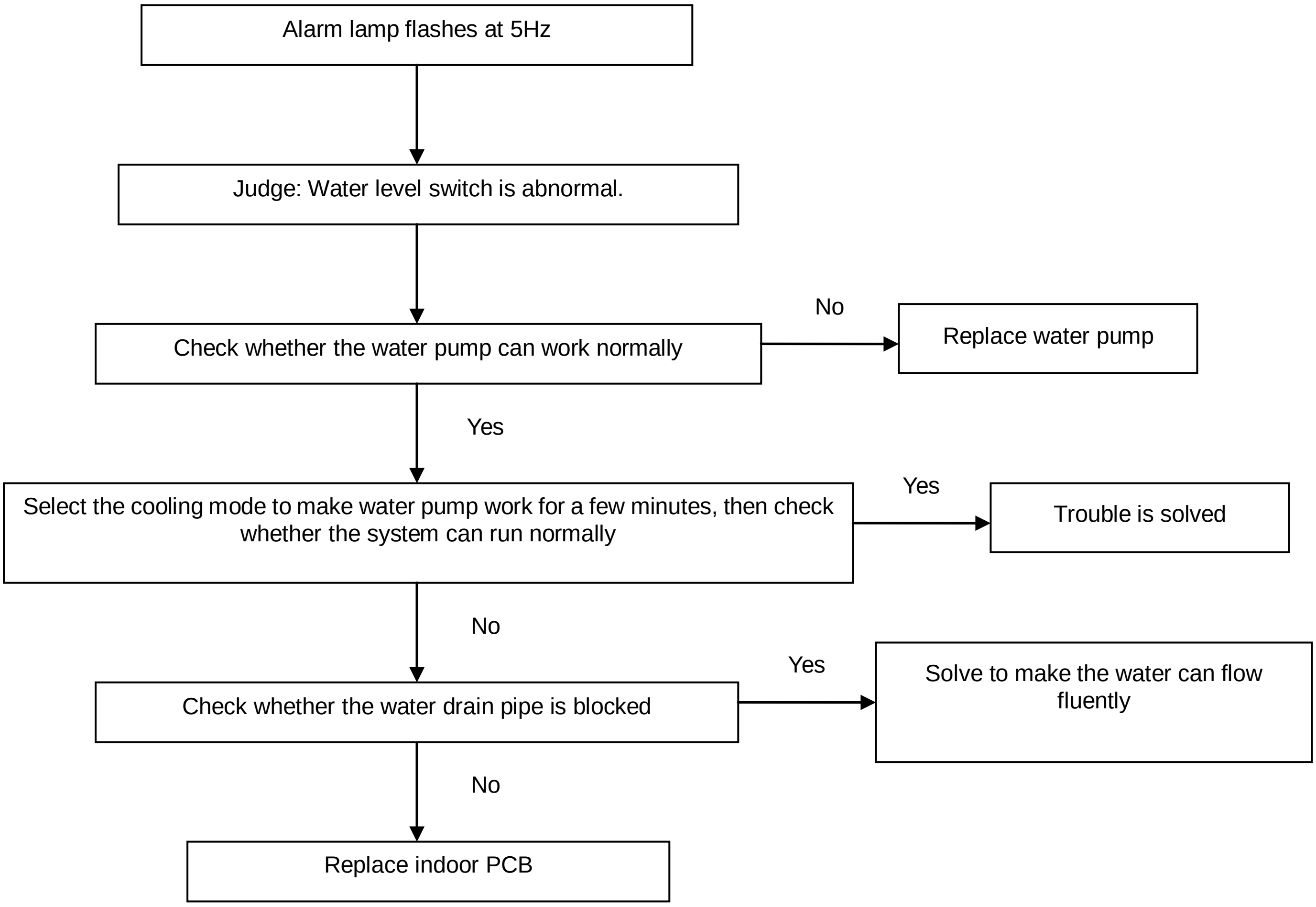
2. Timer lamp flashes



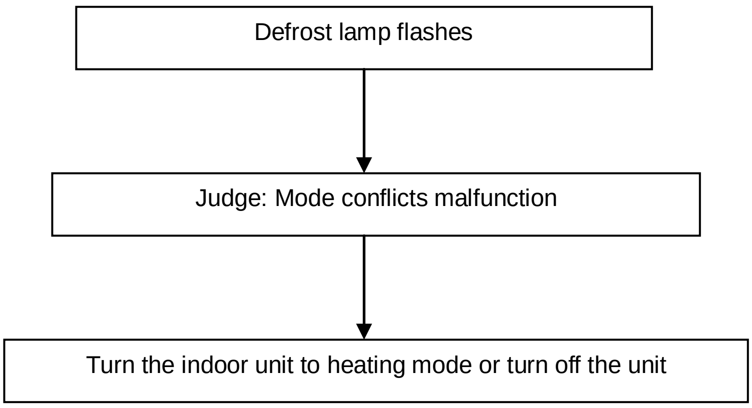
3. Alarm lamp slow-flash



4. Alarm lamp quick-flash



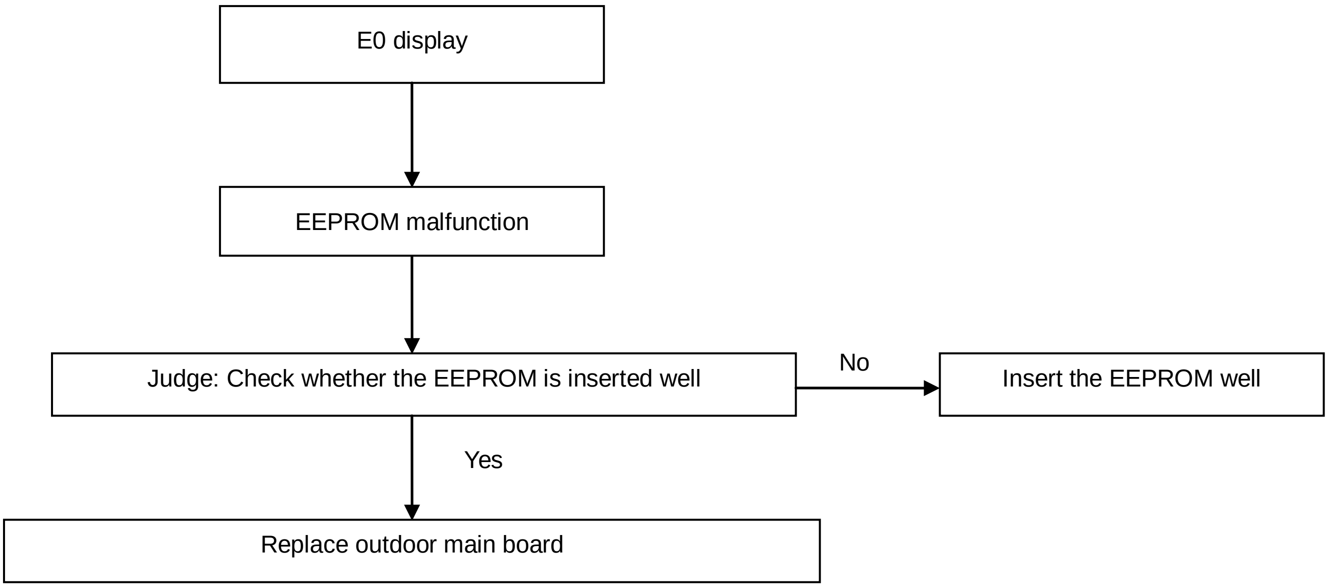
5. Defrost lamp flashes



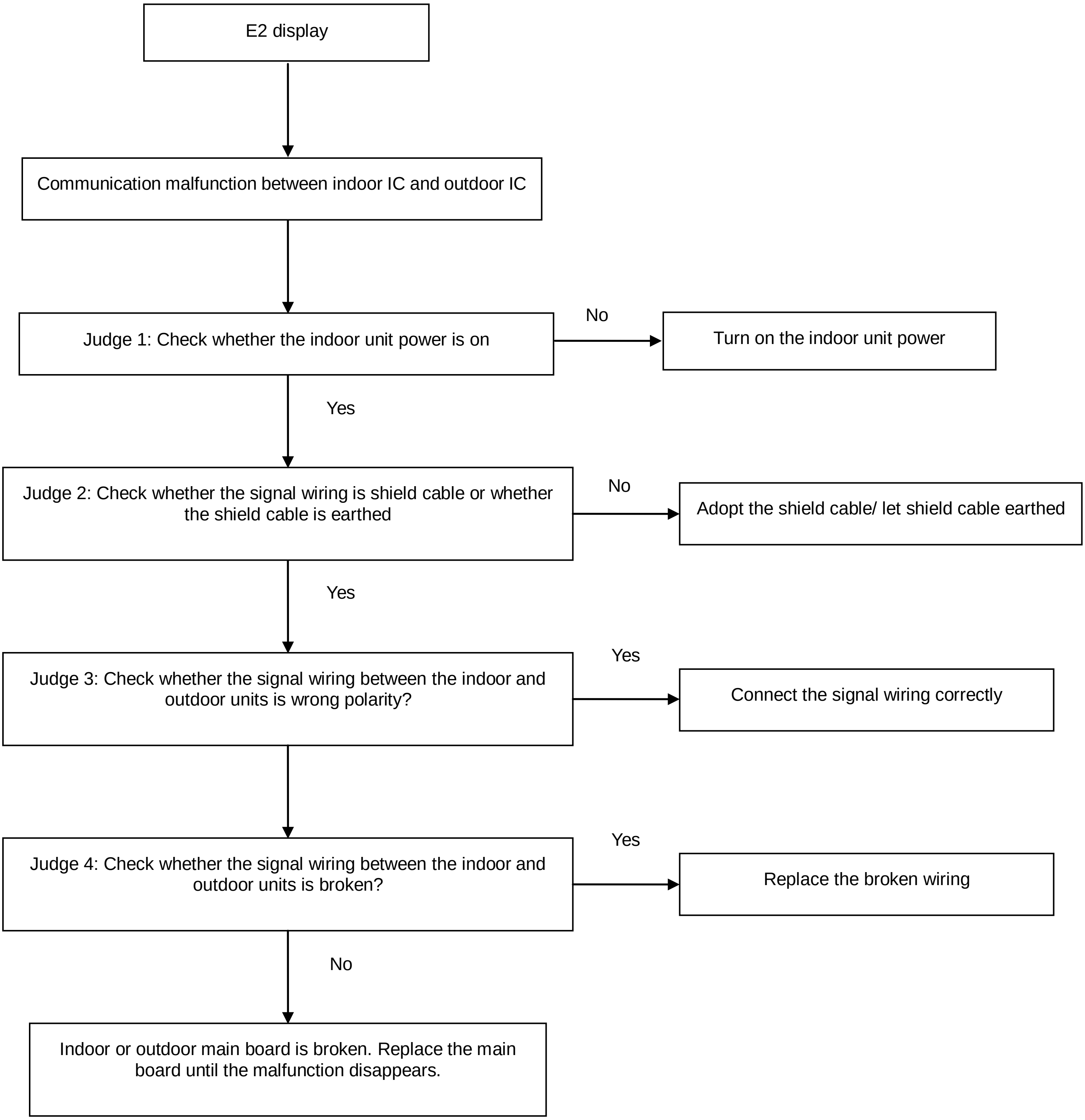
9.2 Outdoor unit malfunction

Display	Malfunction or Protection
E0	EEPROM malfunction
E2	Communication malfunction between indoor IC and outdoor IC
E3	Communication malfunction in outdoor IC and DSP
E4	Malfunction of outdoor temperature sensor
E5	Voltage protection of compressor
E6	PFC module protection (Only for 30K, 36K & 48K with 1 phase)
P0	Top temperature protection of compressor
P1	High pressure protection
P2	Low pressure protection
P3	Current protection of compressor
P4	Discharge temperature protection of compressor
P5	High temperature protection of condenser
P6	Module protection

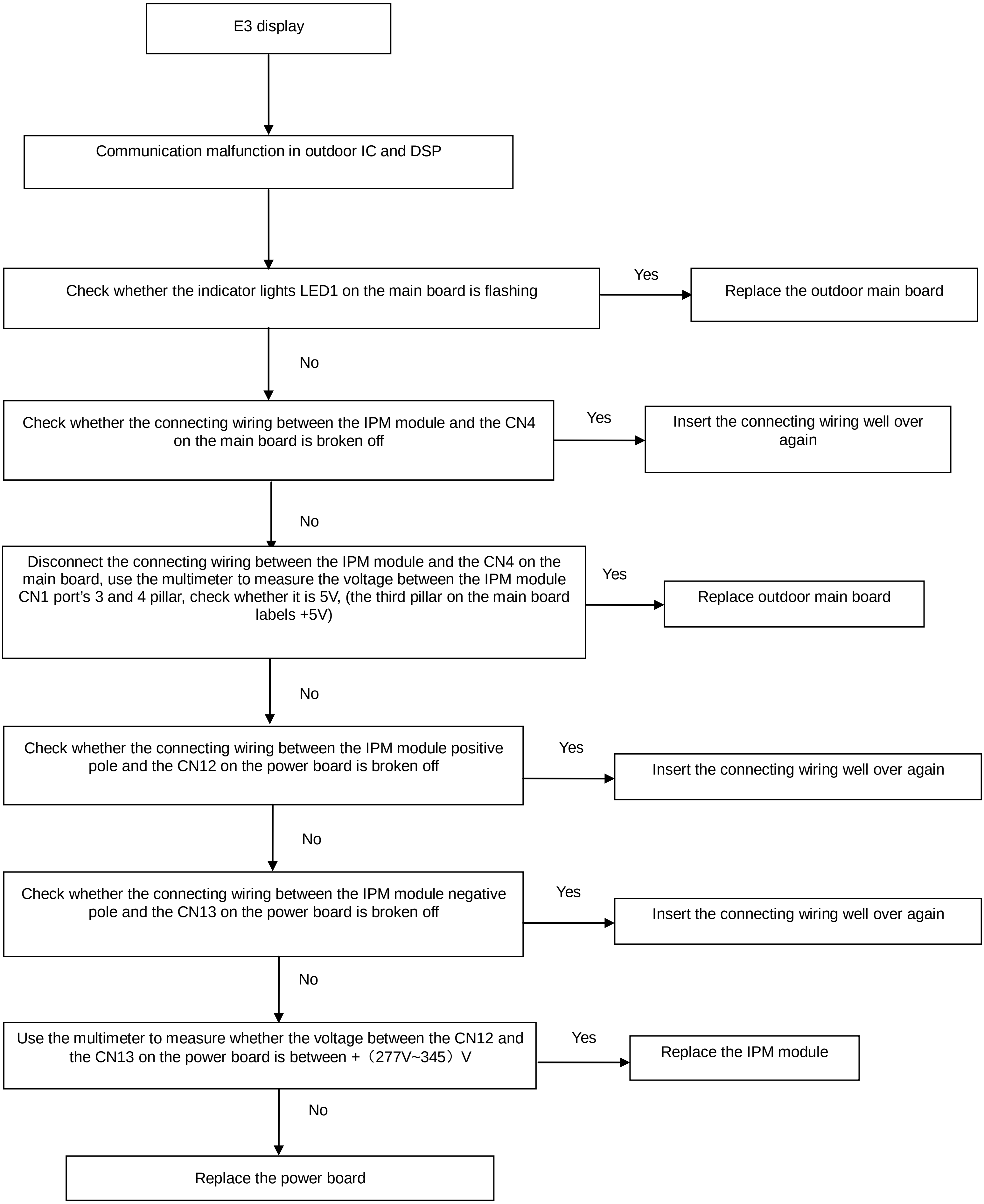
1. E0 malfunction



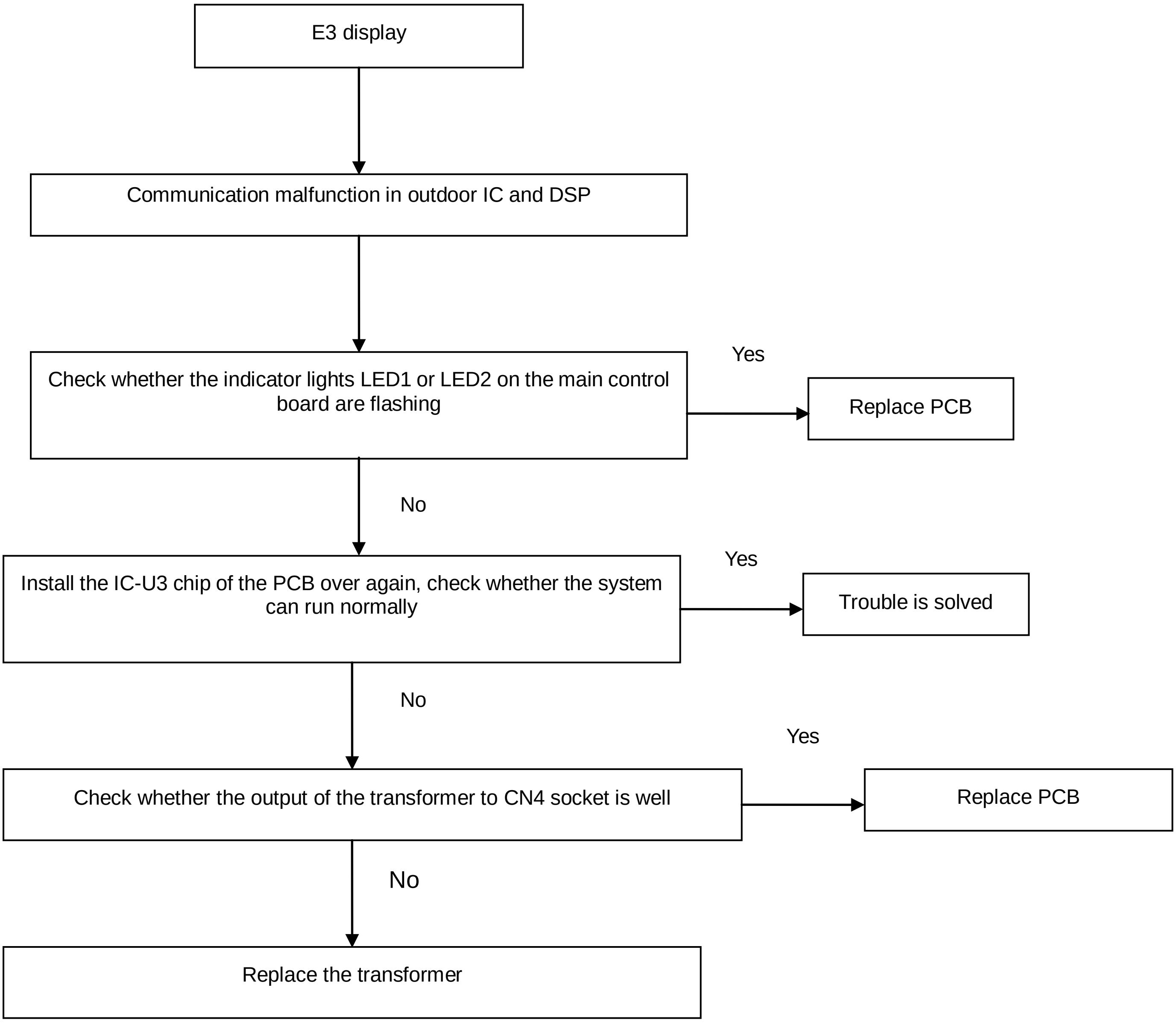
2. E2 malfunction



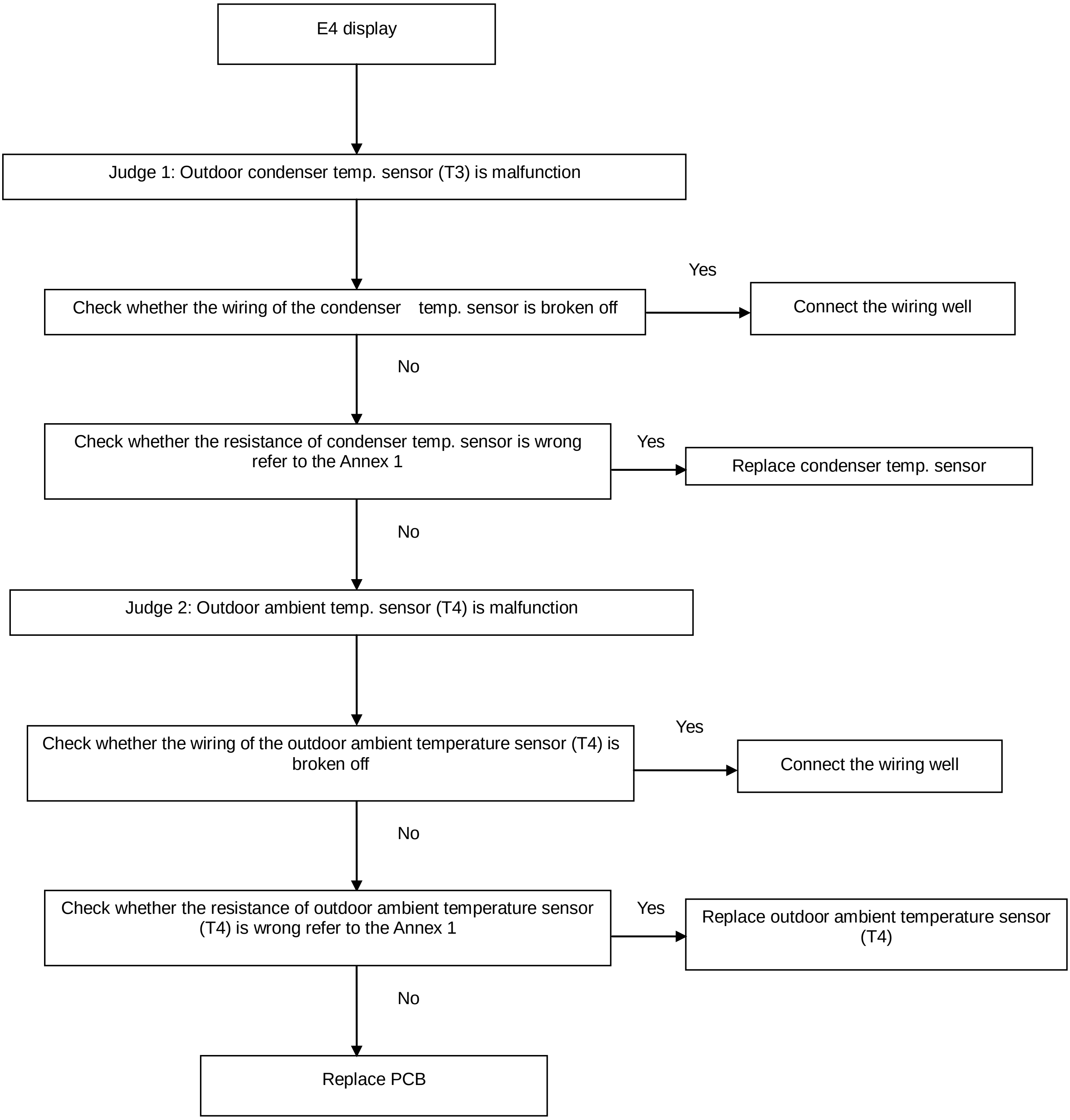
3. E3 malfunction (For 18K & 24K & 30K)



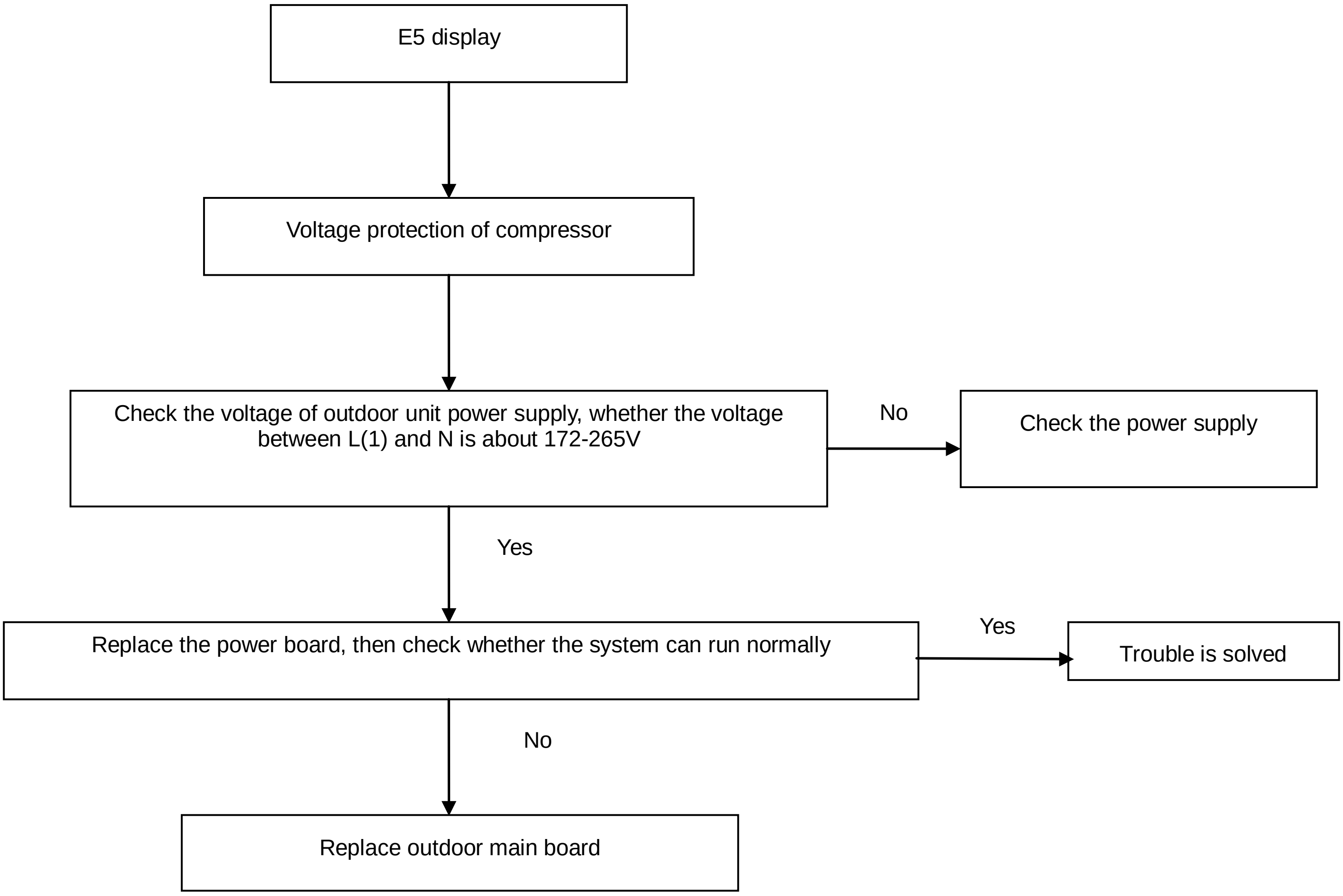
4. E3 malfunction (For 36K & 48K & 60K)



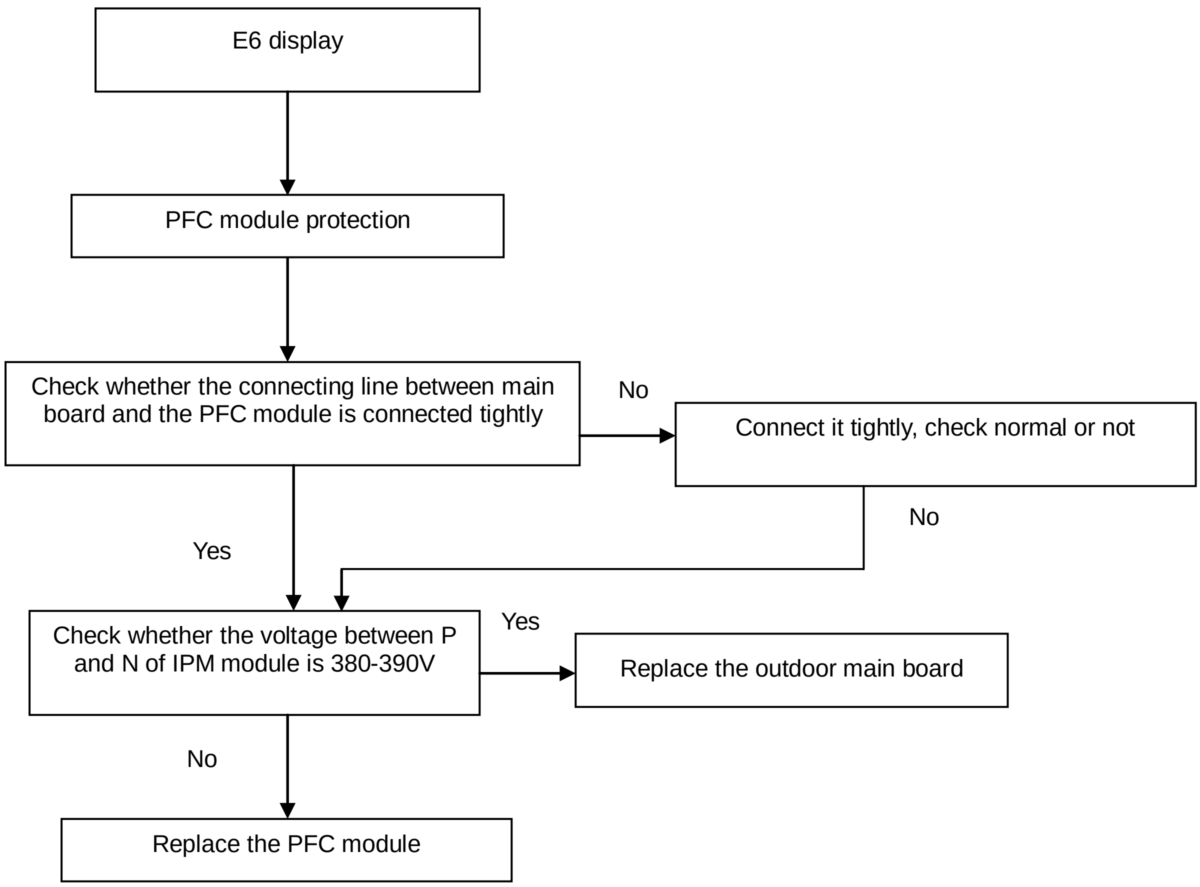
5. E4 malfunction



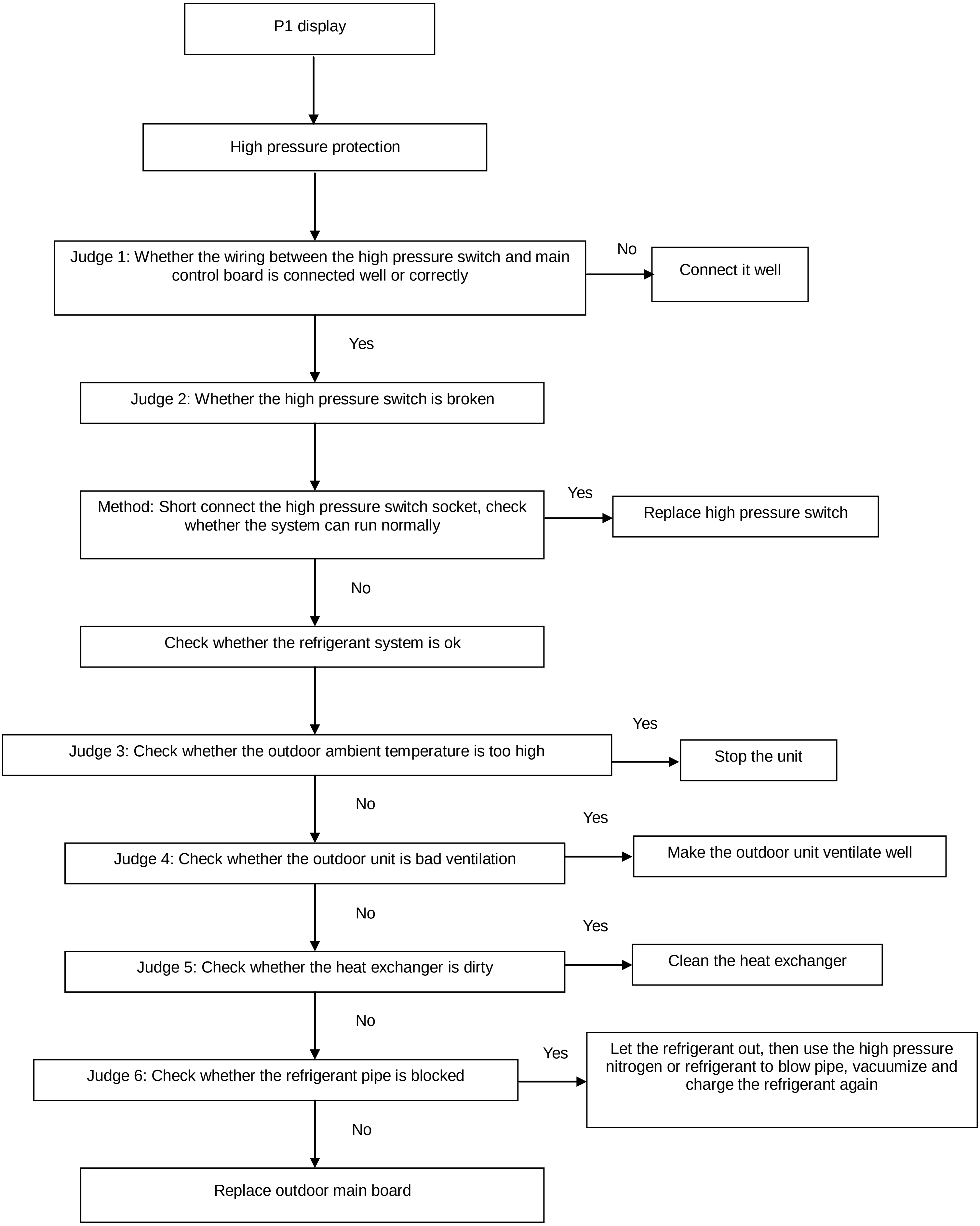
6. E5 malfunction



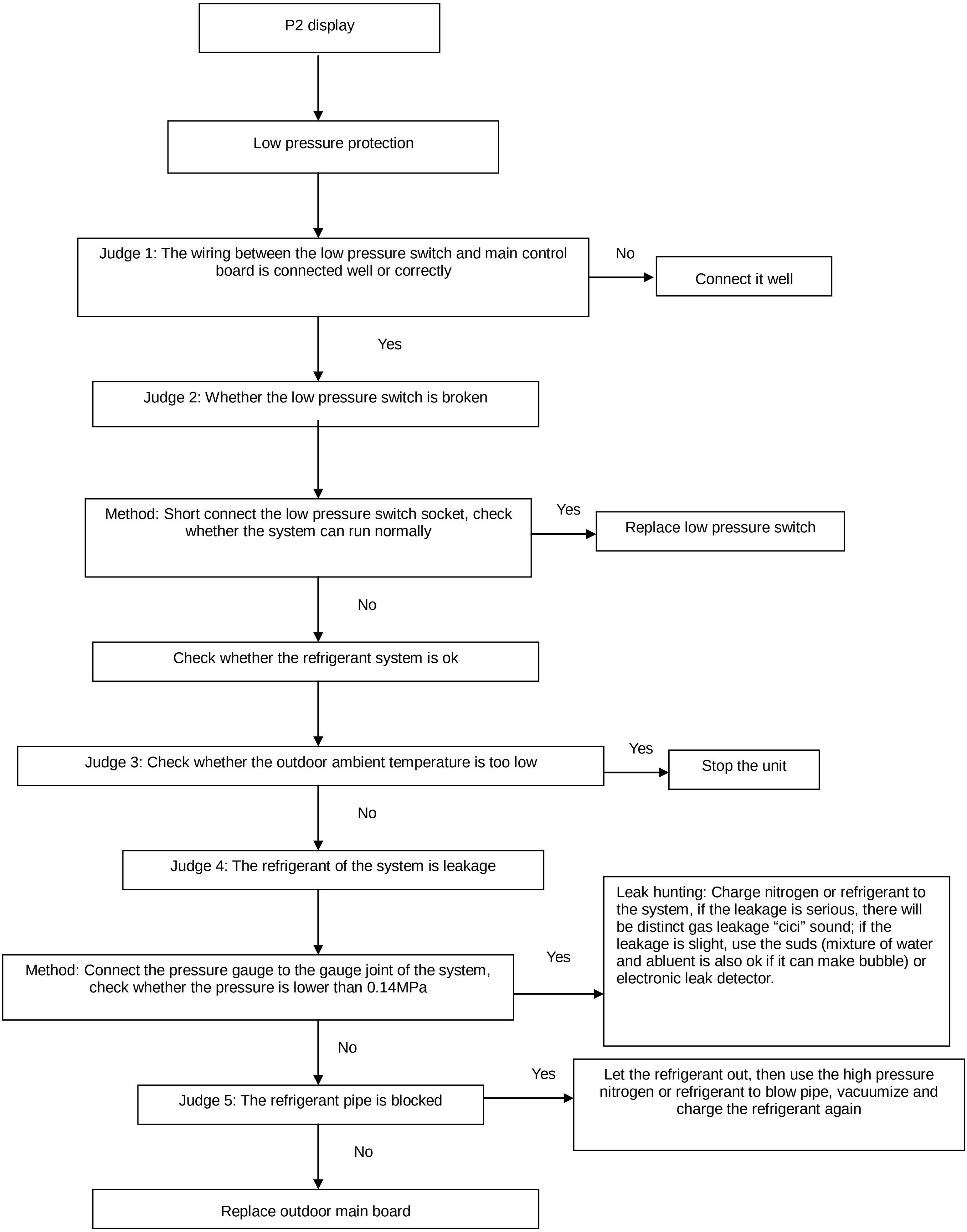
7. E6 malfunction (Only for 30K, 36K & 48K with 1 phase)



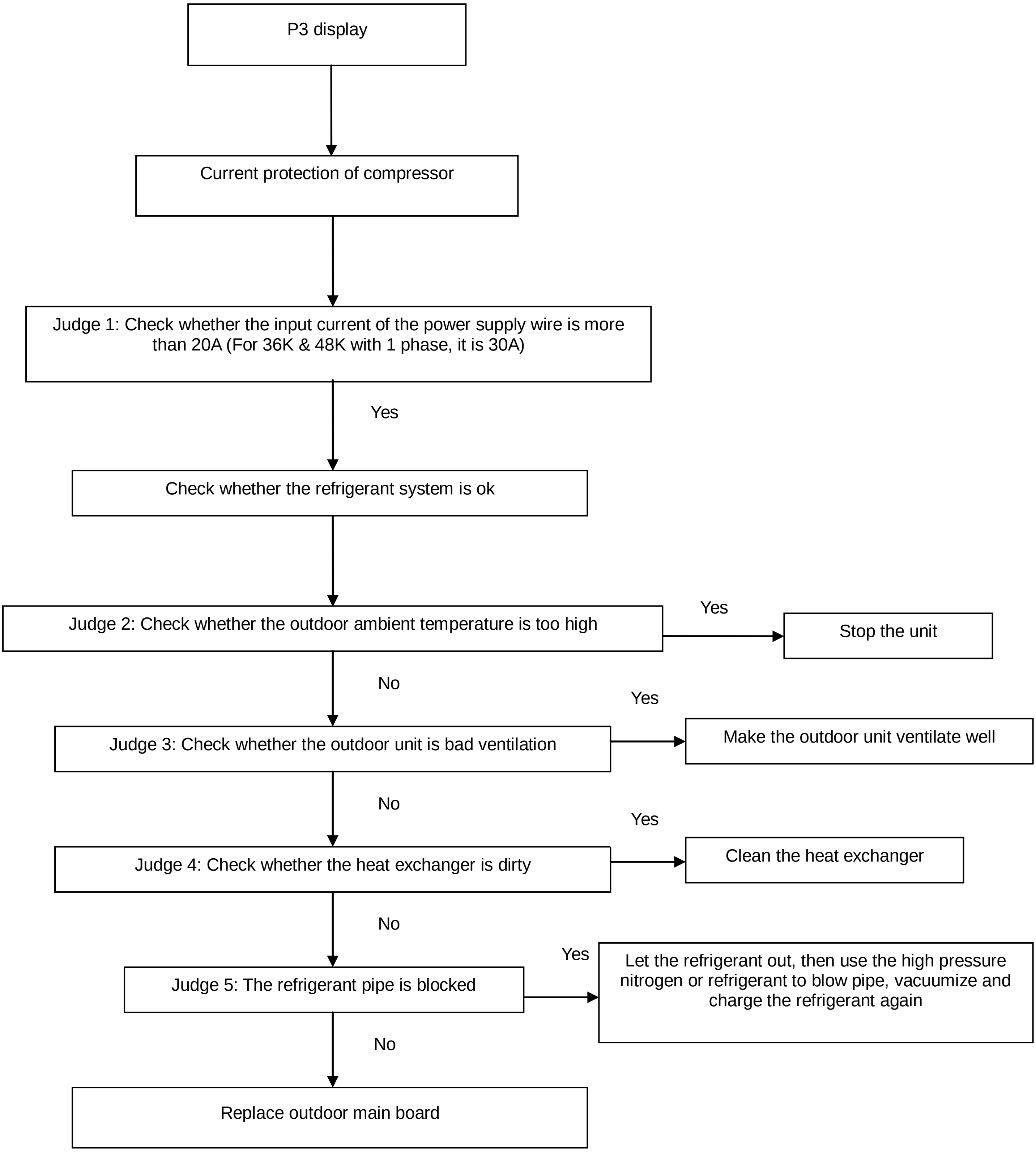
8. P1 malfunction



9. P2 malfunction

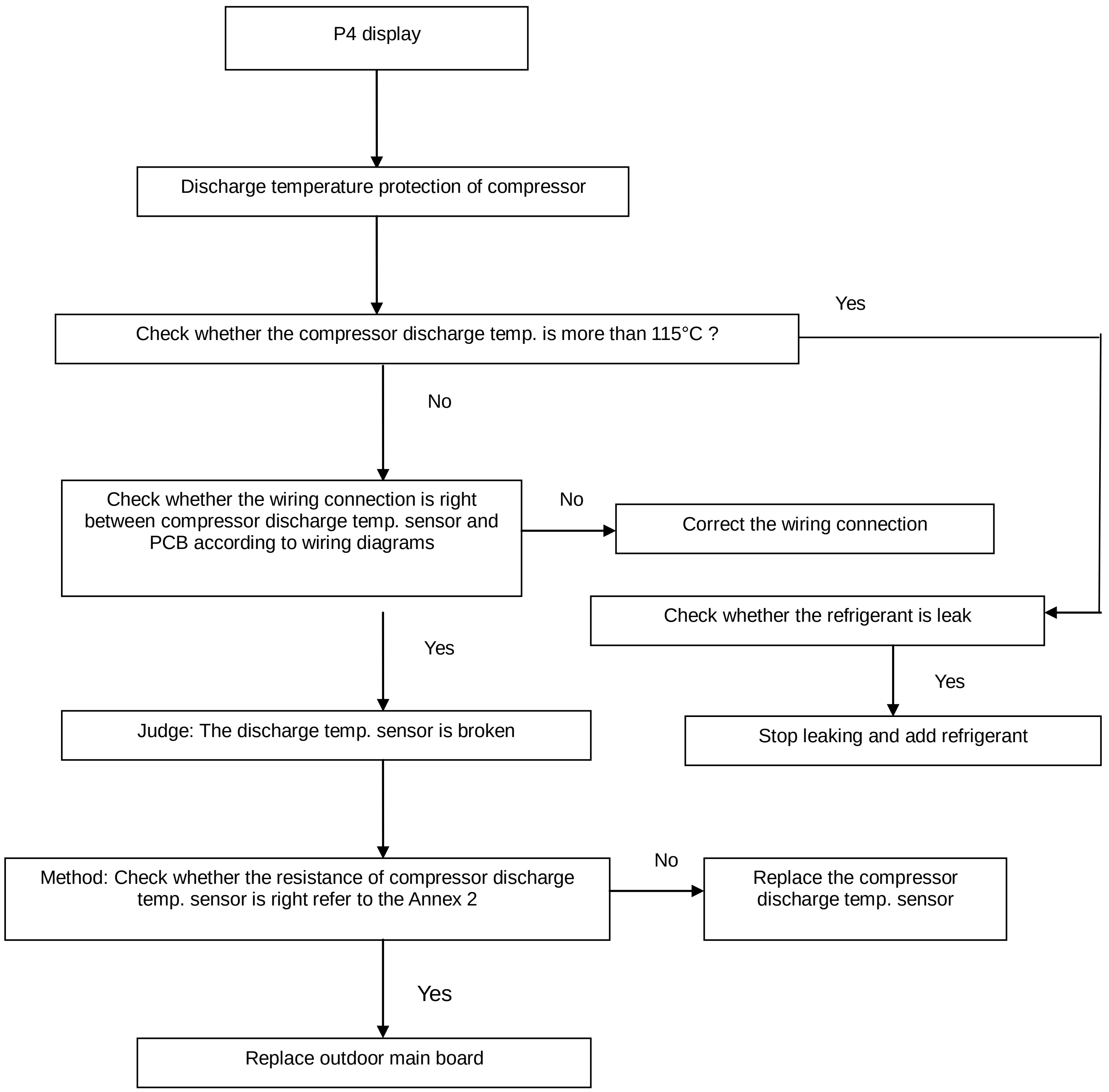


10. P3 malfunction



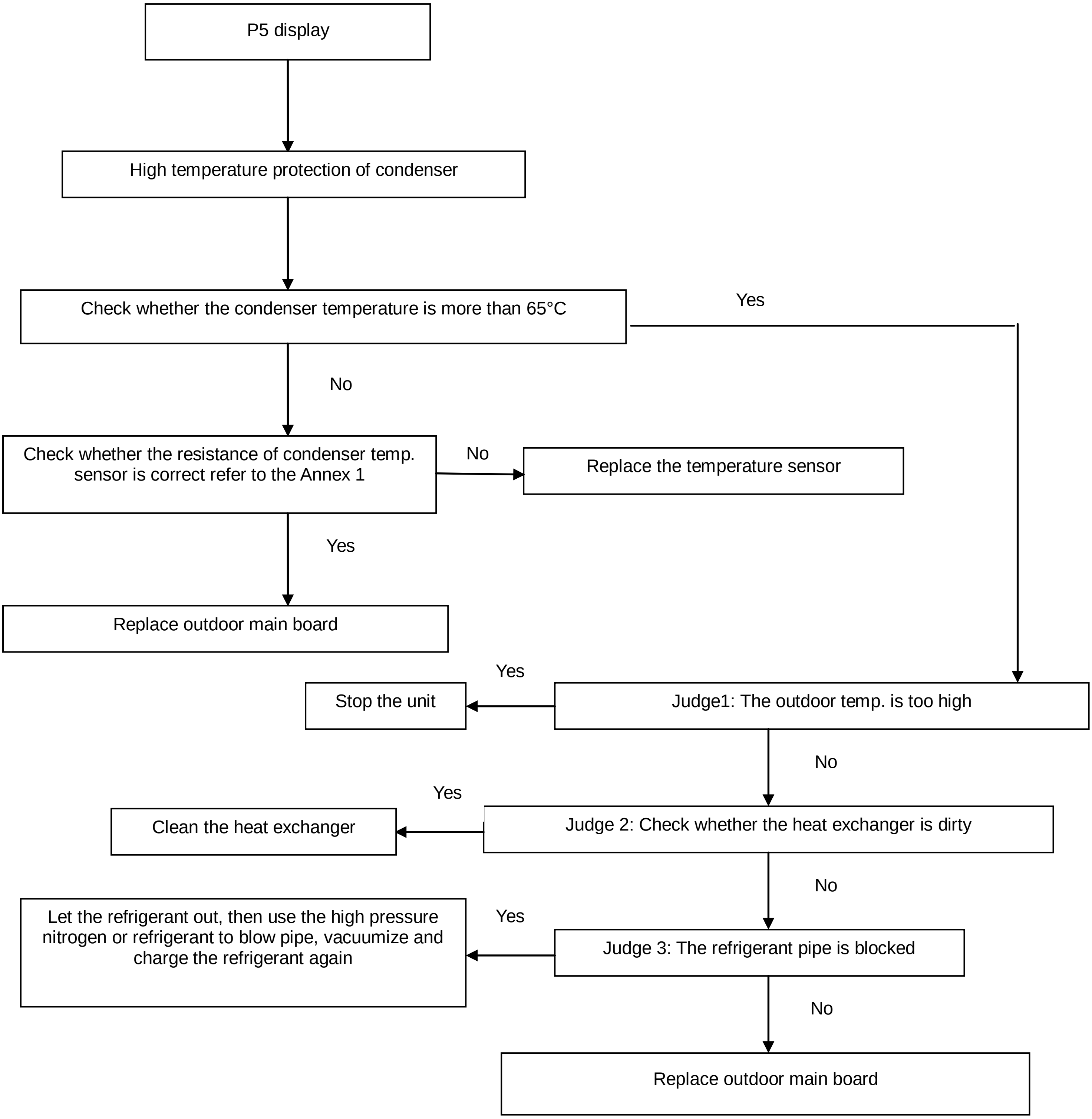
11. P4 malfunction

When compressor discharge temperature is higher than 115°C, the unit will stop, and unit runs again when compressor discharge temperature is lower than 90°C.

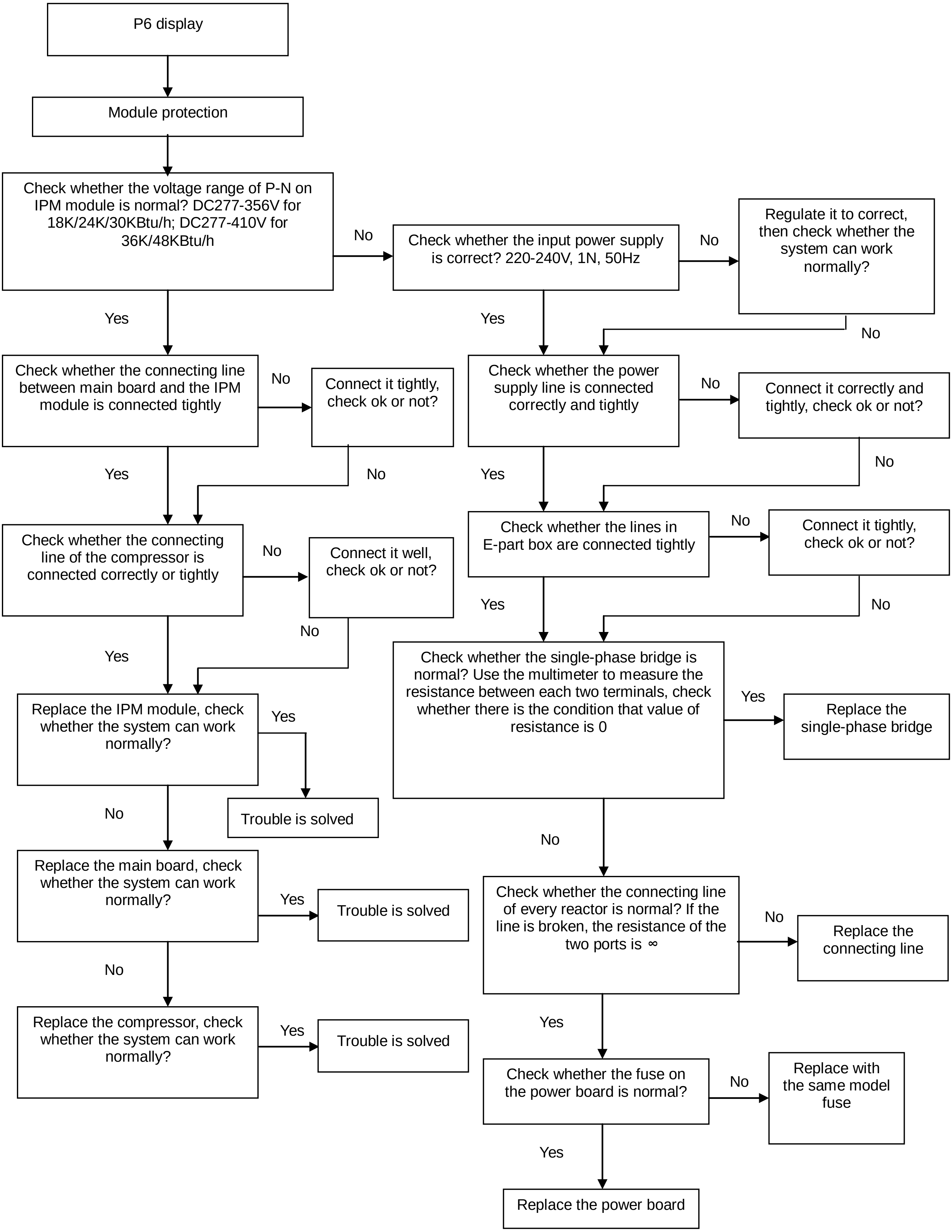


12. P5 malfunction

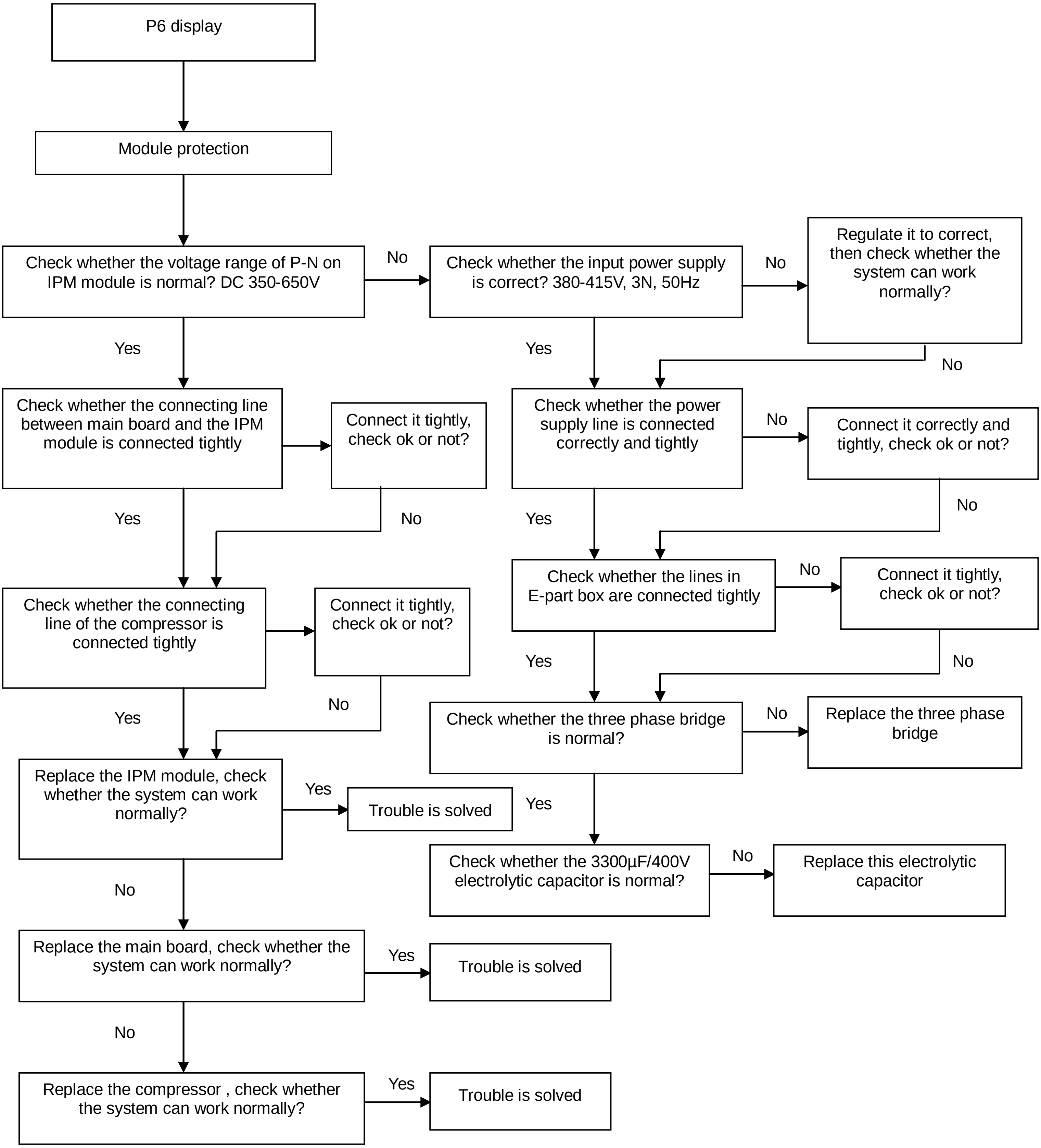
When condenser high temp. is more than 65°C, the unit will stop, and unit runs again when outdoor pipe temp. less than 52°C.



13. P6 malfunction (For single phase units)



14. P6 malfunction (For three phases units)



Appendix Indoor Temp. and Pipe Temp. Sensor Resistance Value Table (℃--K)

℃	K Ohm	℃	K Ohm	℃	K Ohm	℃	K Ohm
-20	115.266	20	12.6431	60	2.35774	100	0.62973
-19	108.146	21	12.0561	61	2.27249	101	0.61148
-18	101.517	22	11.5000	62	2.19073	102	0.59386
-17	96.3423	23	10.9731	63	2.11241	103	0.57683
-16	89.5865	24	10.4736	64	2.03732	104	0.56038
-15	84.2190	25	10.000	65	1.96532	105	0.54448
-14	79.3110	26	9.55074	66	1.89627	106	0.52912
-13	74.5360	27	9.12445	67	1.83003	107	0.51426
-12	70.1698	28	8.71983	68	1.76647	108	0.49989
-11	66.0898	29	8.33566	69	1.70547	109	0.48600
-10	62.2756	30	7.97078	70	1.64691	110	0.47256
-9	58.7079	31	7.62411	71	1.59068	111	0.45957
-8	56.3694	32	7.29464	72	1.53668	112	0.44699
-7	52.2438	33	6.98142	73	1.48481	113	0.43482
-6	49.3161	34	6.68355	74	1.43498	114	0.42304
-5	46.5725	35	6.40021	75	1.38703	115	0.41164
-4	44.0000	36	6.13059	76	1.34105	116	0.40060
-3	41.5878	37	5.87359	77	1.29078	117	0.38991
-2	39.8239	38	5.62961	78	1.25423	118	0.37956
-1	37.1988	39	5.39689	79	1.21330	119	0.36954
0	35.2024	40	5.17519	80	1.17393	120	0.35982
1	33.3269	41	4.96392	81	1.13604	121	0.35042
2	31.5635	42	4.76253	82	1.09958	122	0.3413
3	29.9058	43	4.57050	83	1.06448	123	0.33246
4	28.3459	44	4.38736	84	1.03069	124	0.32390
5	26.8778	45	4.21263	85	0.99815	125	0.31559
6	25.4954	46	4.04589	86	0.96681	126	0.30754
7	24.1932	47	3.88673	87	0.93662	127	0.29974
8	22.5662	48	3.73476	88	0.90753	128	0.29216
9	21.8094	49	3.58962	89	0.87950	129	0.28482
10	20.7184	50	3.45097	90	0.85248	130	0.27770
11	19.6891	51	3.31847	91	0.82643	131	0.27078
12	18.7177	52	3.19183	92	0.80132	132	0.26408
13	17.8005	53	3.07075	93	0.77709	133	0.25757
14	16.9341	54	2.95896	94	0.75373	134	0.25125
15	16.1156	55	2.84421	95	0.73119	135	0.24512
16	15.3418	56	2.73823	96	0.70944	136	0.23916
17	14.6181	57	2.63682	97	0.68844	137	0.23338
18	13.9180	58	2.53973	98	0.66818	138	0.22776
19	13.2631	59	2.44677	99	0.64862	139	0.22231

Part 4
Installation

1. Precaution on Installation

1). Measure the necessary length of the connecting pipe, and make it by the following way.

a. Connect the indoor unit at first, then the outdoor unit.

Bend the tubing in proper way. Do not harm them.

Specially Notice the pipe length/height/dimension of each capacity.

Maximum pipe length

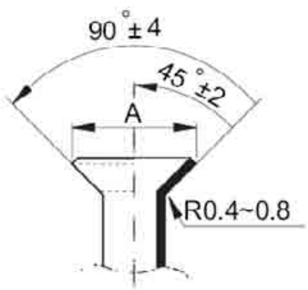
Model	Max. Length	Max. Elevation
12,000Btu/h	10m	5m
18,000Btu/h ~24,000Btu/h	25m	12m
36,000Btu/h	30m	20m
48,000Btu/h~60,000Btu/h	50m	25m

Piping sizes

Model	Liquid(mm)	Gas(mm)
12,000Btu/h~18,000Btu/h	6.4	12.7
24,000Btu/h~60,000Btu/h	9.5	15.9

CAUTIONS

- Daub the surfaces of the flare pipe and the joint nuts with frozen oil, and wrench it for 3~4 rounds
- With hands before fasten the flare nuts.
- Be sure to use two wrenches simultaneously when you connect or disconnect the pipes.

Pipe gauge	Tightening torque	Flare dimension A Min (mm)	Max	Flare shape
Φ6.4	14.2～17.2N.m (144～176 kgf.cm)	8.3	8.7	
Φ9.5	32.7～39.9N.m (333～407kgf.cm)	12.0	12.4	
Φ12.7	49.5～60.3N.m (504～616kgf.cm)	15.4	15.8	
Φ15.9	61.8～75.4N.m (630～770 kgf.cm)	18.6	19.1	
Φ19.1	97.2～118.6N.m (990～1210kgf.cm)	22.9	23.3	

b. The stop value of the outdoor unit should be closed absolutely (as original state). Every time you connect it, first loosen the nuts at the part of stop value, then connect the flare pipe immediately (in 5 minutes). If the nuts have been loosened for a long time, dusts and other impurities may enter the pipe system and may cause malfunction later. So please expel the air out of the pipe with refrigerant before connection.

c. Expel the air after connecting the refrigerant pipe with the indoor unit and the outdoor unit. Then fasten the nuts at the repair-points.

2) Locate The Pipe

a. Drill a hole in the wall (suitable just for the size of the wall conduit), then set on the fittings such as the wall conduit and its cover.

b. Bind the connecting pipe and the cables together tightly with binding tapes. Do not let air in, which will cause water leakage by condensation.

c. Pass the bound connecting pipe through the wall conduit from outside. Be careful of the pipe allocation to do no damage to the tubing.

3) Connect the pipes.

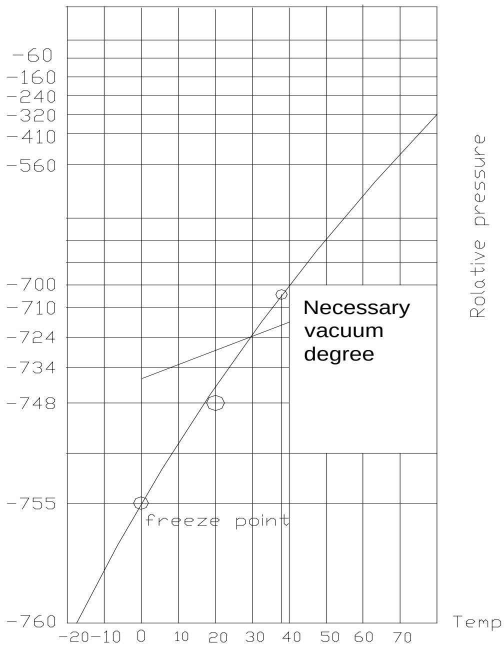
4) Then, open the stem of stop values of the outdoor unit to make the refrigerant pipe connecting the indoor unit with the outdoor unit in fluent flow.

5) Be sure of no leakage by checking it with leak detector or soap water.

6) Cover the joint of the connecting pipe to the indoor unit with the soundproof / insulating sheath (fittings), and bind it well with the tapes to prevent leakage.

2. Vacuum Dry and Leakage Checking

1) Vacuum Dry: use vacuum pump to change the moisture (liquid) into steam (gas) in the pipe and discharge it out of the pipe to make the pipe dry. Under one atmospheric pressure, the boiling point of water(steam temperature) is 100°C. Use vacuum pump to make the pressure in the pipe near vacuum state, the boiling point of water falls relatively. When it falls under outdoor temperature, the moisture in the pipe will be vaporized.

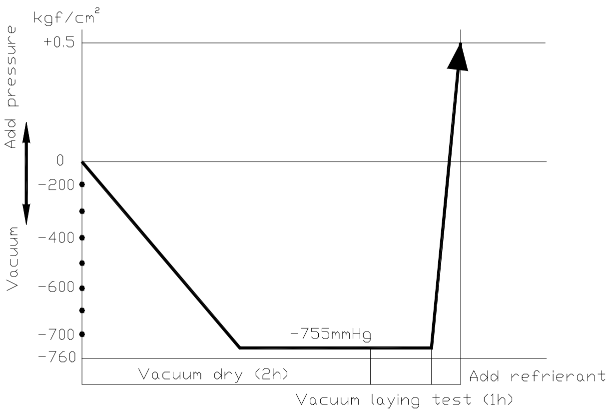


2) Vacuum dry procedure

There are two methods of vacuum dry due to different construction environment: common vacuum dry, special vacuum dry.

① Common vacuum dry procedure

- Vacuum dry (for the first time)---connect the all-purpose detector to the inlet of liquid pipe and gas pipe, and run the vacuum pump more than two hours (the vacuum pump should be below -755mmHg)
- If the pump can't achieve below -755mmHg after pumping 2 hours, moisture or leakage point will still exist in the pipe. At this time, it should be pumped 1 hour more.
- If the pump can't achieve -755mmHg after pumping 3 hours, please check if there are some leakage points.
- Vacuum placement test: place 1 hour when it achieves -755mmHg, pass if the vacuum watch shows no rising. If it rises, it shows there's moisture or leakage point.
- Vacuuming from liquid pipe and gas pipe at the same time.
- Sketch map of common vacuum dry procedure.



② Special vacuum dry procedure

- This vacuum dry method is used in the following conditions:
- There's moisture when flushing the refrigerant pipe.
- Rainwater may enter into the pipe.
- Vacuum dry for the first time …… 2h pumping

③.Vacuum destroy for the second time …… Fill nitrogen to 0.5Kgf/cm^2

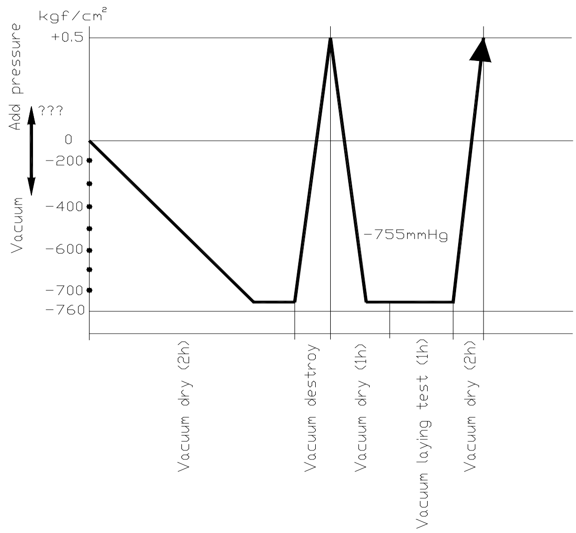
Because nitrogen is for drying gas, it has vacuum drying effect during vacuum destroy. But if the moisture is too much, this method can't dry thoroughly. So, please pay more attention to prevent water entering and forming condensation water.

④ Vacuum dry for the second time……1h pumping

Determinant: Pass if achieving below -755mmHg. If -755mmHg can't be achieved in 2h, repeat procedure ③ and ④.

⑤ Vacuum placing test …… 1h

⑥ Sketch map of special vacuum dry procedure



3. Additional Refrigerant Charge

Caution

a) Refrigerant cannot be charged until field wiring has been completed.
b) Refrigerant may only be charged after performing the leak test and the vacuum pumping.
c) When charging a system, care shall be taken that its maximum permissible charge is never exceeded, in view of the danger of liquid hammer.
d) Charging with an unsuitable substance may cause explosions and accidents, so always ensure that the appropriate refrigerant is charged.
e) Refrigerant containers shall be opened slowly.
f) Always use protective gloves and protect your eyes when charging refrigerant.

The outdoor unit is factory charged with refrigerant. Calculate the added refrigerant according to the diameter and the length of the liquid side pipe of the outdoor unit/indoor unit.

R(g) / D(mm) / L(m)	φ6.4	Φ9.5	Φ12.7
Less than 5m (One-way)	—	—	—
Added Refrigerant When Over 5m(One-way)	11g/m×(L-5)	30g/m×(L-5)	60g/m×(L-5)

Remark:
R (g): Additional refrigerant to be charged
L (m): The length of the refrigerant pipe (one-way)
D (mm): Liquid side piping diameter

4. Water Drainage

4.1 Gradient and Supporting

1). Keep the drainpipe sloping downwards at a gradient of at least 1/50. Keep the drainpipe as short as possible and eliminate the air bubble.

2). The horizontal drainpipe should be short. When the pipe is too long, a prop stand must be installed to keep the gradient of 1/50 and prevent bending. Refer to the following table for the specification of the prop stand.

	Diameter	Distance between the prop stands
Hard PVC pipe	25~40mm	1.5~2m

3). Precautions

① The diameter of drainpipe should meet the drainage requirement at least.

② the drainpipe should be heat-insulated to prevent atomization.

③ Drainpipe should be installed before installing indoor unit. After powering on, there is some water in water-receiver plate. Please check if the drain pump can operate correctly.

④ All connection should be firm.

⑤ Wipe color on PVC pipe to note connection.

⑥ Climbing, horizontal and bending conditions are prohibited.

⑦The dimension of drainpipe can't less than the connecting dimension of indoor drainpipe.

⑧ Heat-insulation should be done well to prevent condensation.

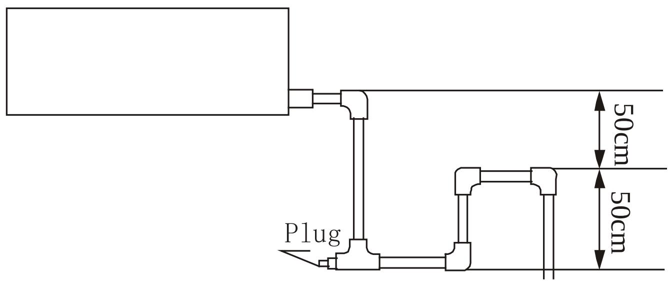
⑨Indoor units with different drainage type can't share one convergent drainpipe.

4.2 Drainpipe Trap

1). If the pressure at the connection of the drainpipe is negative, it needs to design drainpipe trap.

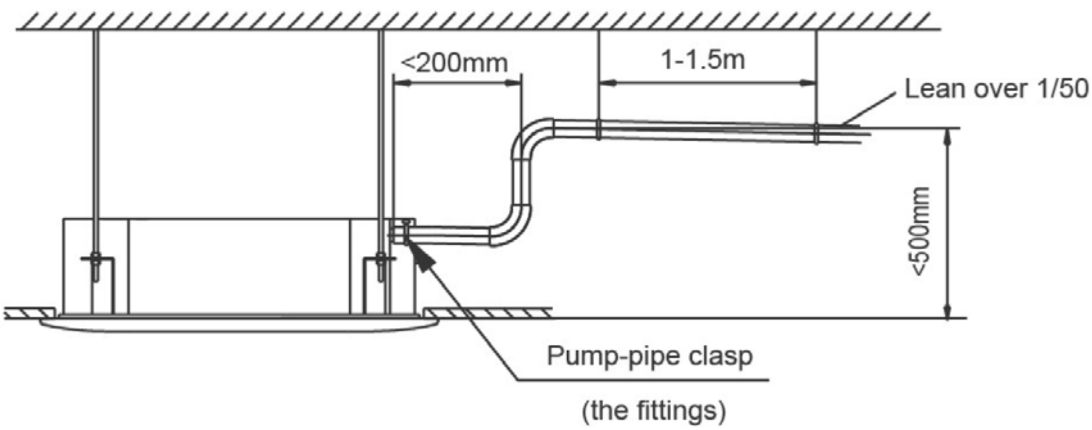
2). Every indoor unit needs one drainpipe trap.

3). A plug should be designed to do cleaning.

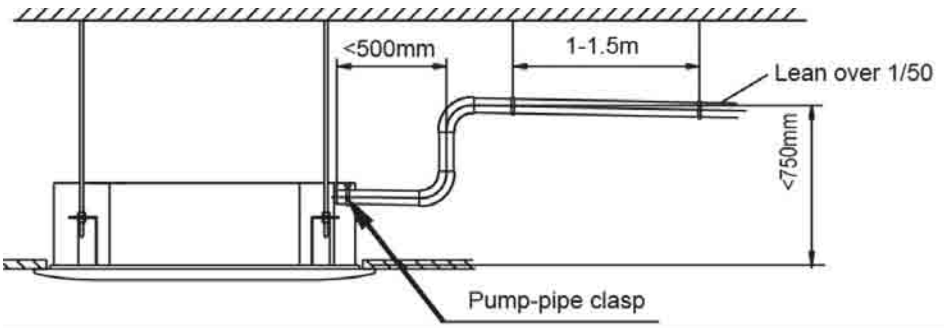


4.3 Upwards drainage (drain pump)

For Four-way cassette(compact)



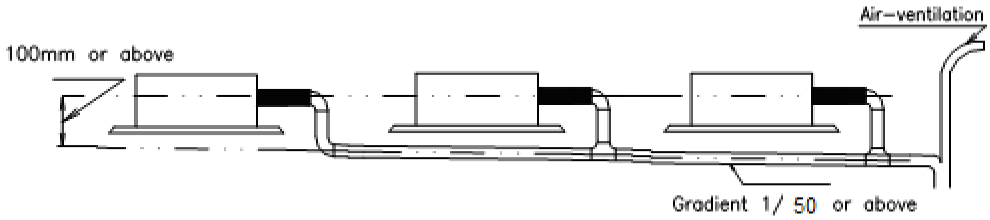
For Four-way cassette



4.4 Convergent drainage

1). The number of indoor units should be as small as possible to prevent the traverse main pipe overlong.

2). Indoor unit with drain pump and indoor unit without drain pump should be in different drainage system.



3). Selecting the diameter

Number of connecting indoor units → Calculate drainage volume → Select the diameter

Calculate allowed volume =Total cooling capacity of indoor units (HP)×2 (l/ hr)

	Allowed volume(lean 1/50) (l/ hr)	I.D. (mm)	Thick
Hard PVC	∽≤ 14	₵25	3.0
Hard PVC	14<∽≤ 88	₵30	3.5
Hard PVC	88<∽≤ 334	₵40	4.0
Hard PVC	175<∽≤ 334	₵50	4.5
Hard PVC	334<∽	₵80	6.0

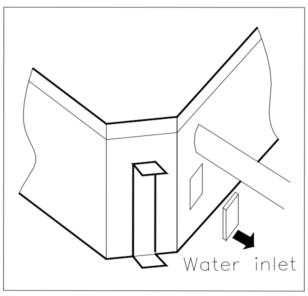
4.5 Drainage test

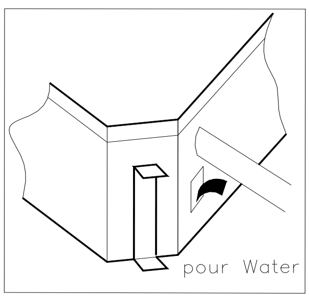
1). Drainage without drain pump

After finishing drainpipe installation, pour some water into the water receiver plate to check if the water flows smoothly.

2). Drainage with drain pump

① Poke the Water Level Switch, remove the cover, use water pipe to pour 2000ml water into the water receipt plate through the water inlet.





② Turn on the power to Cooling operation. Check the pump's operation and switch on the Water Level Switch. Check the pump's sound and look into the transparent hard pipe in the outlet at the same time to check if the water can discharge normally.

③ Stop the air conditioner running, turn off the power, and put back the cover.

- Stop the air conditioner. After 3 minutes, check if it has abnormity. If the collocation of drainpipes is illogical, the water will flow back overfull, which will cause the alarm lamp flashes, even overflow from the water receipt plate.
- Keep on pouring water until it gives an alarm signal for high water level, check if the pump drains water at once. If the water level can't fall below the alarmed water level after 3 minutes, the air conditioner will stop. Turn off the power and drain the remained water, and then turn on the air conditioner.

Note: the drain stuff in the main water receipt plate is for maintenance. Stuff up the drain stuff to prevent water leakage.

5. Insulation Work

5.1 Insulation material and thickness

1). Insulation material

Insulation material should adopt the material which is able to endure the pipe's temperature: no less than 70℃ in the high-pressure side, no less than 120℃ in the low-pressure side(For the cooling type machine, no requirements at the low-pressure side.)

Example: Heat pump type----Heat-resistant Polyethylene foam (withstand above 120℃)

Cooling only type---- Polyethylene foam (withstand above 100℃)

2). Thickness choice for insulation material

Insulation material thickness is as follows:

	Pipe diameter (mm)	Adiabatic material thickness
Refrigerant pipe	Φ6.4—Φ25.4	10mm
	Φ28.6—Φ38.1	15mm
Drainage pipe	Inner diameterΦ20—Φ32	6mm

5.2 Refrigerant pipe insulation

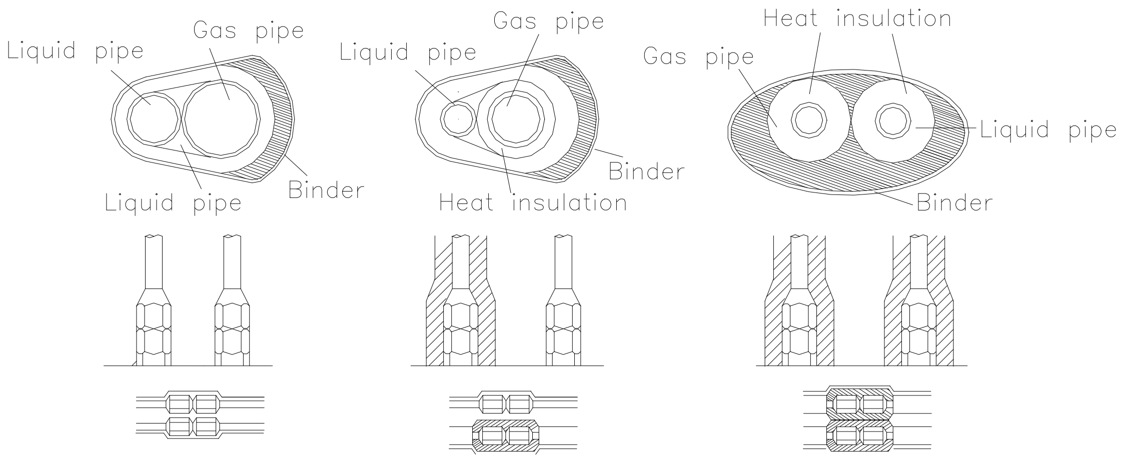
1). Work Procedure

① Before laying the pipes, the non-jointing parts and non-connection parts should be heat insulated.

② When the gas proof test is eligible, the jointing area, expanding area and the flange area should be heat insulated

2). Insulation for non-jointing parts and non-connection parts

wrong	right	
Gas pipe and liquid pipe should not be put together to insulate	Insulate the gas pipe (cooling only)	Insulate the gas pipe and liquid pipe

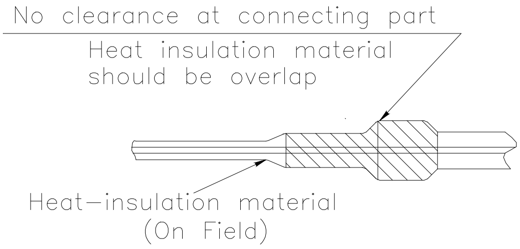


For construction convenience, before laying pipes, use insulation material to insulate the pipes to be deal with, at the same time, at two ends of the pipe, remain some length not to be insulated, in order to be welded and check the leakage after laying the pipes.

3). Insulate for the jointing area, expanding area and the flange area

① Insulate for the jointing area, expanding area and the flange area should be done after checking leakage of the pipes

② Make sure there's no clearance in the joining part of the accessorial insulation material and local preparative insulation material.



5.3 Drainage pipe insulation

1) The connection part should be insulated, or else water will be condensing at the non-insulation part.

5.4 Note

1) The jointing area, expanding area and the flange area should be heat insulated after passing the pressure test

2) The gas and liquid pipe should be heat insulated individually, the connecting part should be heat insulated individually.

3) Use the attached heat-insulation material to insulate the pipe connections (pipes' tie-in ,expand nut) of the indoor unit.

6. Wiring

Please refer to the Wiring Diagram.

7. Test Operation

(1) The test operation must be carried out after the entire installation has been completed.

(2) Please confirm the following points before the test operation.

- The indoor unit and outdoor unit are installed properly.
- Tubing and wiring are correctly completed.
- The refrigerant pipe system is leakage-checked.
- The drainage is unimpeded.
- The ground wiring is connected correctly.
- The length of the tubing and the added stow capacity of the refrigerant have been recorded.
- The power voltage fits the rated voltage of the air conditioner.
- There is no obstacle at the outlet and inlet of the outdoor and indoor units.
- The gas-side and liquid-side stop values are both opened.
- The air conditioner is pre-heated by turning on the power.

(3) According to the user's requirement, install the remote controller when the remote controller's signal can reach the indoor unit smoothly.

(4) Test operation

Set the air conditioner under the mode of "COOLING" with the remote controller, and check the following points.

Indoor unit

- Whether the switch on the remote controller works well.
- Whether the buttons on the remote controller works well.
- Whether the air flow louver moves normally.
- Whether the room temperature is adjusted well.
- Whether the indicator lights normally.
- Whether the temporary buttons works well.
- Whether the drainage is normal.
- Whether there is vibration or abnormal noise during operation.

Outdoor unit

- Whether there is vibration or abnormal noise during operation.
- Whether the generated wind, noise, or condensed of by the air conditioner have influenced your neighborhood.
- Whether any of the refrigerant is leaked.

Part 5
Control

1. Wireless Remote Controller

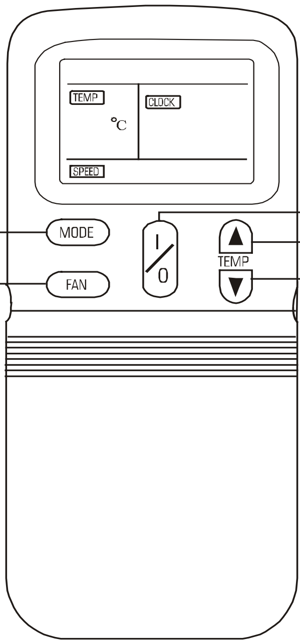
1.1 R11-HG/E

Mode select button

Each time you push the button, a mode is selected in a sequence that goes from AUTO, COOL, DRY, HEAT (cooling only type without), FAN ONLY and back to AUTO.

Fan button

This button is used for selecting fan speed. Each time you push the button, a fan speed is selected in a sequence that goes from AUTO, LOW, MED(Some models without, HIGH, and back to AUTO.



I/O Button

Push the button to start operation, push the button again to stop operation.

Temperature Button

▲ : The set temperature is increased to 30°C

▼ : The set temperature is decreased to 17°C

After Sliding the cover, the button and function are as follows:

Auto louver button

Push this button to swing louver. Push the button again to stop.

Confirmation button

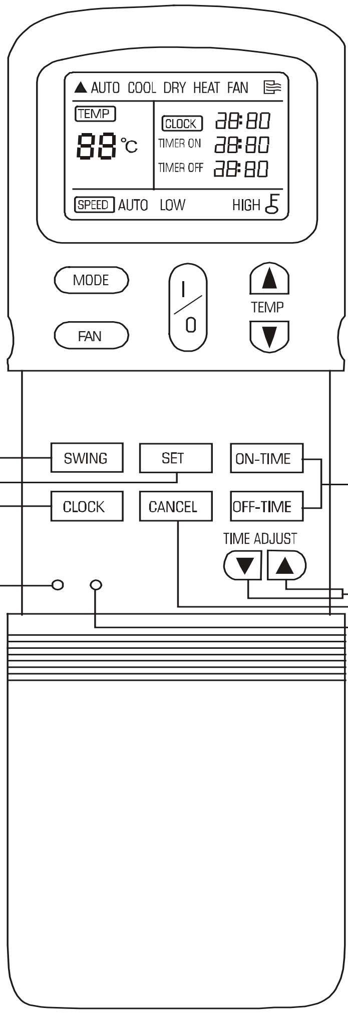
Push this button to confirm ON and OFF timer settings.

Clock button

Push this button to set time.

Lock button

When you push the LOCK button, all current settings are locked in and the remote controller does not accept any operation except that of the LOCK button. Use the lock mode when you want to prevent setting from being changed accidentally or play fully. Push the LOCK button again when you want to cancel the LOCK mode.



Timer button

Push ON-TIME timer button to set the ON timer. Push OFF-TIME timer button to set the OFF timer.

Time adjust button

This button is used for setting the current time and OFF time.

▲ Adjust forwards

▼ Adjust backwords

Cancel button

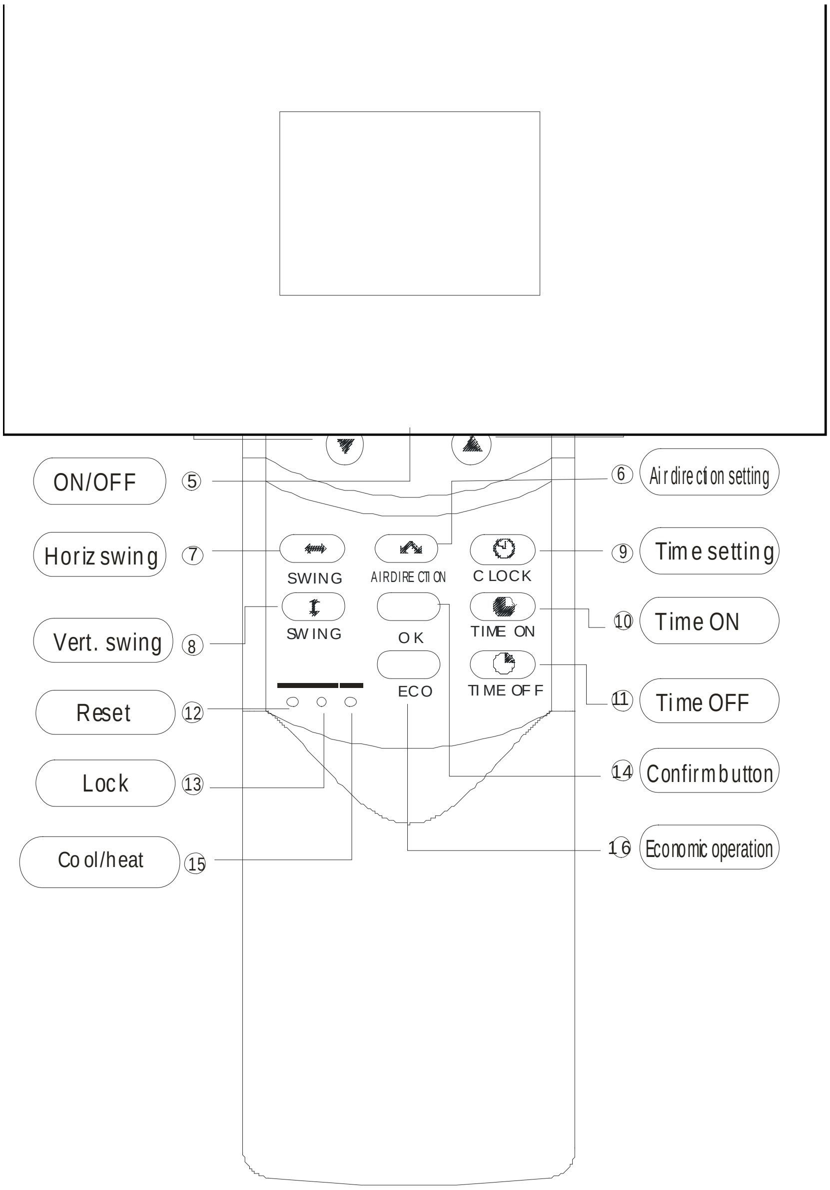
Push this button to cancel ON timer and OFF timer.

RESET button

When you push the RESET button, all current settings are cancelled and get into the condition of beginning. In the clock, the colon in "0:00" will flash, the mode displays "AUTO", fan speed displays "AUTO", the temperature displays "24".

1.2 R05/BGE

The R05/BGE wireless remote controller is for Four-way cassette type and the Ceiling& floor type.





1.3 General Function for wireless remote controller:

Model and Specification

Model	R05/BGE
Rated voltage	3.0V(2pieces of LR03 7＃ batteries)
Min voltage for sending signal of CPU	2.4V
Effective receiving distance	8m~11m
Operation condition	-5~60℃

Buttons and functions

1. MODE: Once pressing, running mode will be selected in the following sequence:

→AUTO COOL DRY HEAT FAN

NOTE: No heating mode for cool only type unit.
2. FAN SPEED: Fan speed will be selected in following sequence once pressing this button:

→AUTO LOW MED HIGH

3. Adjust ▼ : Decrease the set temp. Keeping pressing will decrease the temp with 1℃ per 0.5s.

4. Adjust ▲ : Increase the set temp. Keeping pressing will increase the temp with 1℃ per 0.5s.

5. ON/OFF: For turning on or turning off the air conditioner.

6. AIR DIRECTION: Activate swing function of air deflector. Once pressing, air deflector will turn 6°. For normal operation and better cooling and heating effect, deflector will not turn to the degree which is the state of deflector when the unit is turned off.(Only available when remote controller is used with corresponding unit.)

7. HORIZ SWING: Activate or turn off horizontal swing function. (Only available when remote controller is used with corresponding unit, i.e. Ceiling & floor type)

8. VERT SWING: Activate or turn off vertical swing function.

(Only available when remote controller is used with corresponding unit.)

9. CLOCK: Display the current time. (12:00 is displayed when resetting or electrifying for the first time.)

Press CLOCK for 5s, icon indicating hour will flash with 0.5s. Press it again; icon indicating minute will flash with 0.5s. ▼ and ▲ are used to adjust the figure. Setting or modification is effective only by pressing OK button to make confirmation.

10. TIME ON: For time ON setting. Once pressing this button, the time will increase by 0.5 hour. When the set time exceeds 10 hours, pressing the button will increase the time by 1 hour. Adjusting the figure to 0.00 will cancel time ON setting.

11. TIME OFF: For time OFF setting. Once pressing this button, the time will increase by 0.5 hour. When the set time exceeds 10 hours, pressing the button will increase the time by 1 hour.

Adjust the figure to 0.00 will cancel time ON setting.

12. RESET (inner located): Press this button with a needle of 1mm to cancel the current setting and reset remote controller.

13. LOCK (inner located): Press this button with a needle of 1mm to lock or unlock the current setting.

14. OK: Used to confirm the time setting and modification.

15. COOL/HEAT (inner located): Press this button with a needle of 1mm to shift mode between COOL only and COOL&HEAT. During setting, background light will be lightened. Factory default mode is COOL &HEAT.

16. ECO: Activate or turn off economic operation mode. It is suggested to turn on this function when sleeping. (Only available when remote controller is used with corresponding unit.)